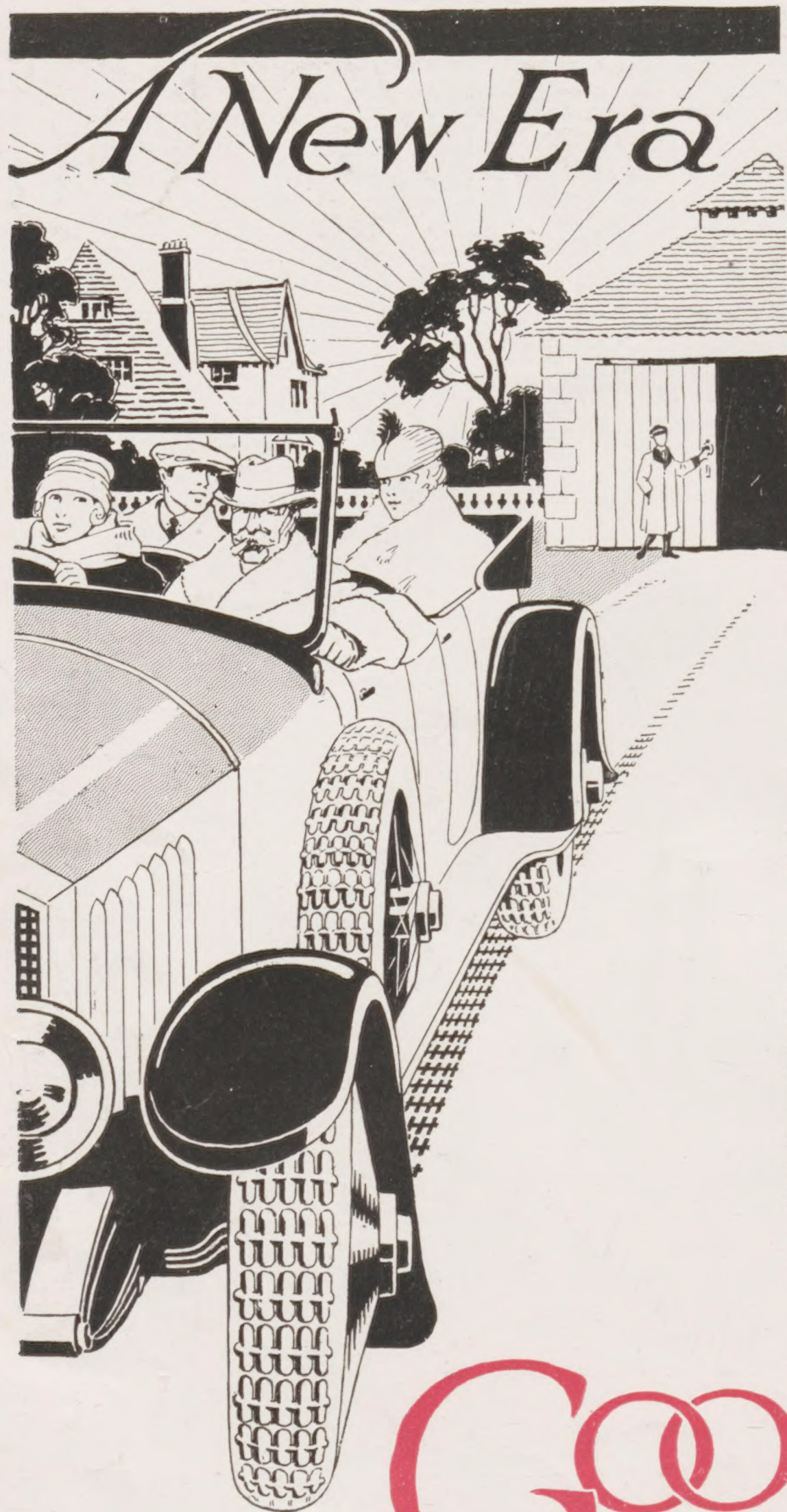


THE MOTOR OWNER

PUBLISHED MONTHLY
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THE future stretches ahead full of many happy days in the out-of-doors among the beauty spots of England, and the numerous motoring delights of which the car owner has only been able to dream for the last four years may at last be realised.

At home and over seas Goodrich tyres have proven absolutely reliable under the hardest conditions possible. Those who have had experience of them on war service will see that none other than Goodrich are fitted to their cars for the work and pleasures of Peace, and there may be some to whom motoring holds a further unrevealed delight—the pleasure and security of the Goodrich Safety Tread.

**FULL-SIZED
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TYRES.**

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By Appointment



to H.M. the King

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The Representative British Car
30 h.p. and 45 h.p.
6 Cylinders.

The Daimler Company Ltd

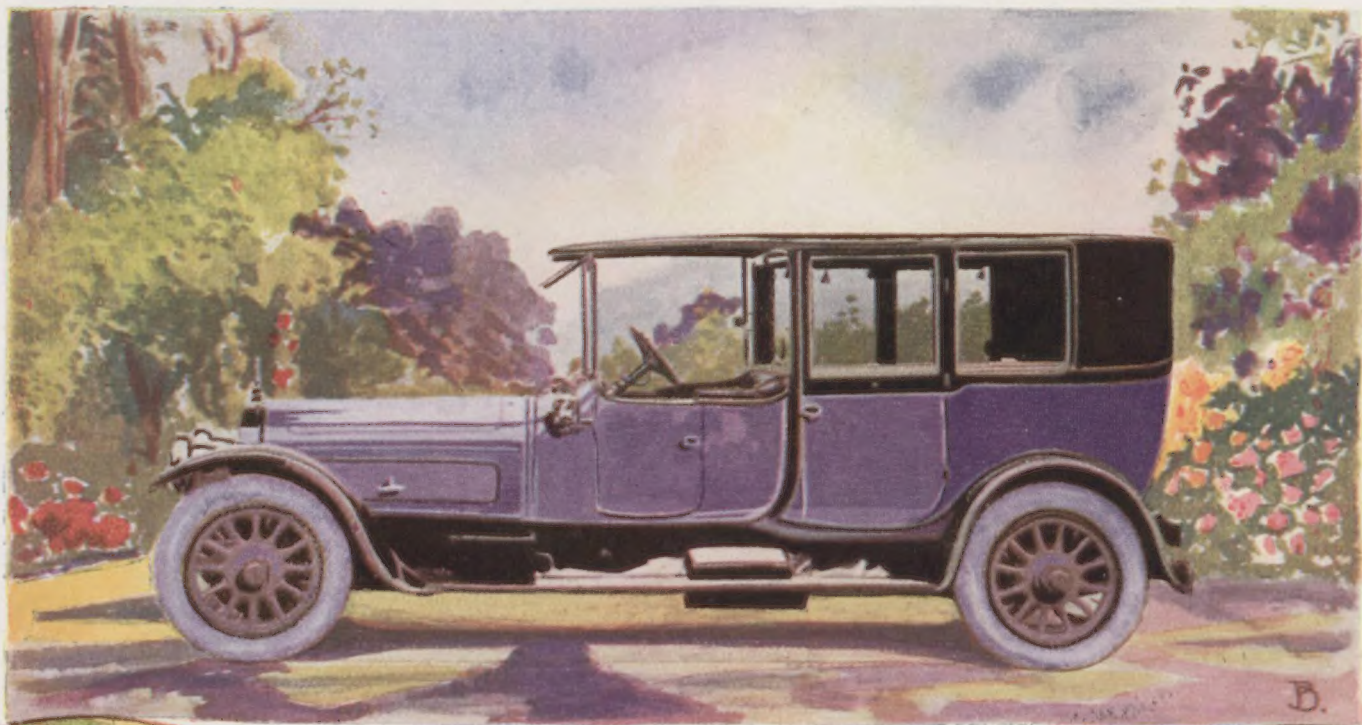
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HOWES & SONS, Ltd.

*Coach Builders and
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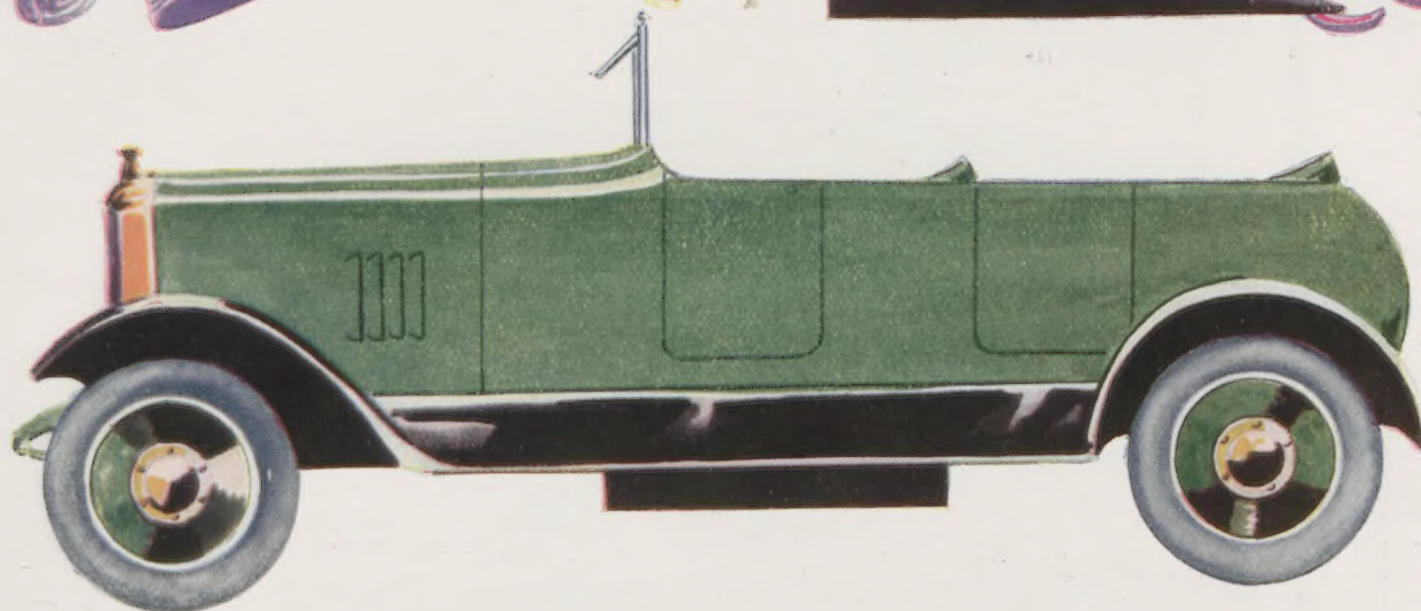
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Sole District Agents for Wolseley Cars

Autocrat

Convertible Coupé



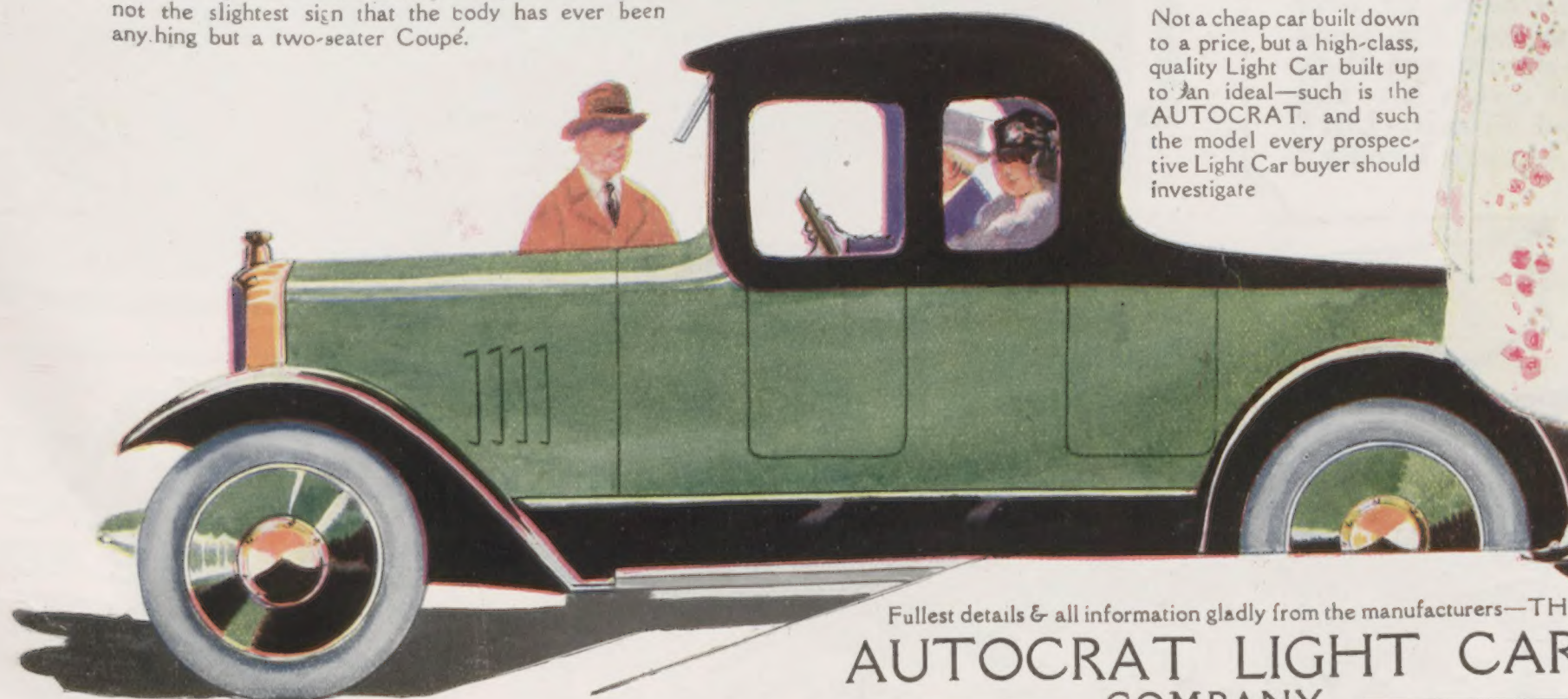
THIS illustration pictures one of the many luxurious features of the post-war Autocrat Light Cars. As will be seen, the body proper consists of two parts—a Sporting type four-seater in combination with a top, which, when lowered in position, entirely covers up the two back seats, and forms a perfect two-seater, closed or open Coupé, and is fully patented.

So complete is the design and combination, that when the top is removed there is no appearance whatever that the car could by any possible means be a two-seater Coupé, and when the top is in position there is not the slightest sign that the body has ever been anything but a two-seater Coupé.

THE AUTOCRAT is equally excellent both in appearance and in actual service on the Road, and that service is best suggested by the completeness of its specification, which is here set out, but considerably abridged:—

ENGINE—11'9 4-cylinder, efficient, flexible, silent, beautifully balanced; Electric Dynamo Lighting and Starter; RADIATOR—Honeycomb type, large cooling surface; PETROL TANK—8 gallons, including spare gallon; CARBURETTER—Zenith; BRAKES—acting on back hubs, fitted with cooling fins; SPEEDS—1 to 50 m. p.h.; TRANSMISSION—all-enclosed with removable differential, Timken bearings throughout; STEERING GEAR—adjustable to take up slightest slack; Complete Instrument Board, including Petrol Gauge, Oil Indicator, Clock, Speedometer, Lighting and Starting Switch, Voltmeter and Ampmeter; Luxurious Body, flush sides, no unsightly projections, splendidly upholstered, all catches, handles, and hinges fitted flush; One-man hood: Complete tool and spare wheel chests.

Not a cheap car built down to a price, but a high-class, quality Light Car built up to an ideal—such is the AUTOCRAT, and such the model every prospective Light Car buyer should investigate



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Fullest details & all information gladly from the manufacturers—THE
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COMPANY

Balsall Heath .. Birmingham
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SPEED, lightness and dependability have become the habit, and the new model, both in design and method of manufacture, is the epitome of all that has been sanctioned by the strenuous engineering experiences of recent years. The carefully devised plans for production on a great scale are proceeding apace. Motorists who wish to make sure of what is undoubtedly the best value in car production likely to come up over the horizon for some years—should put their names down in the "Second Priority List" for an "Austin Twenty."



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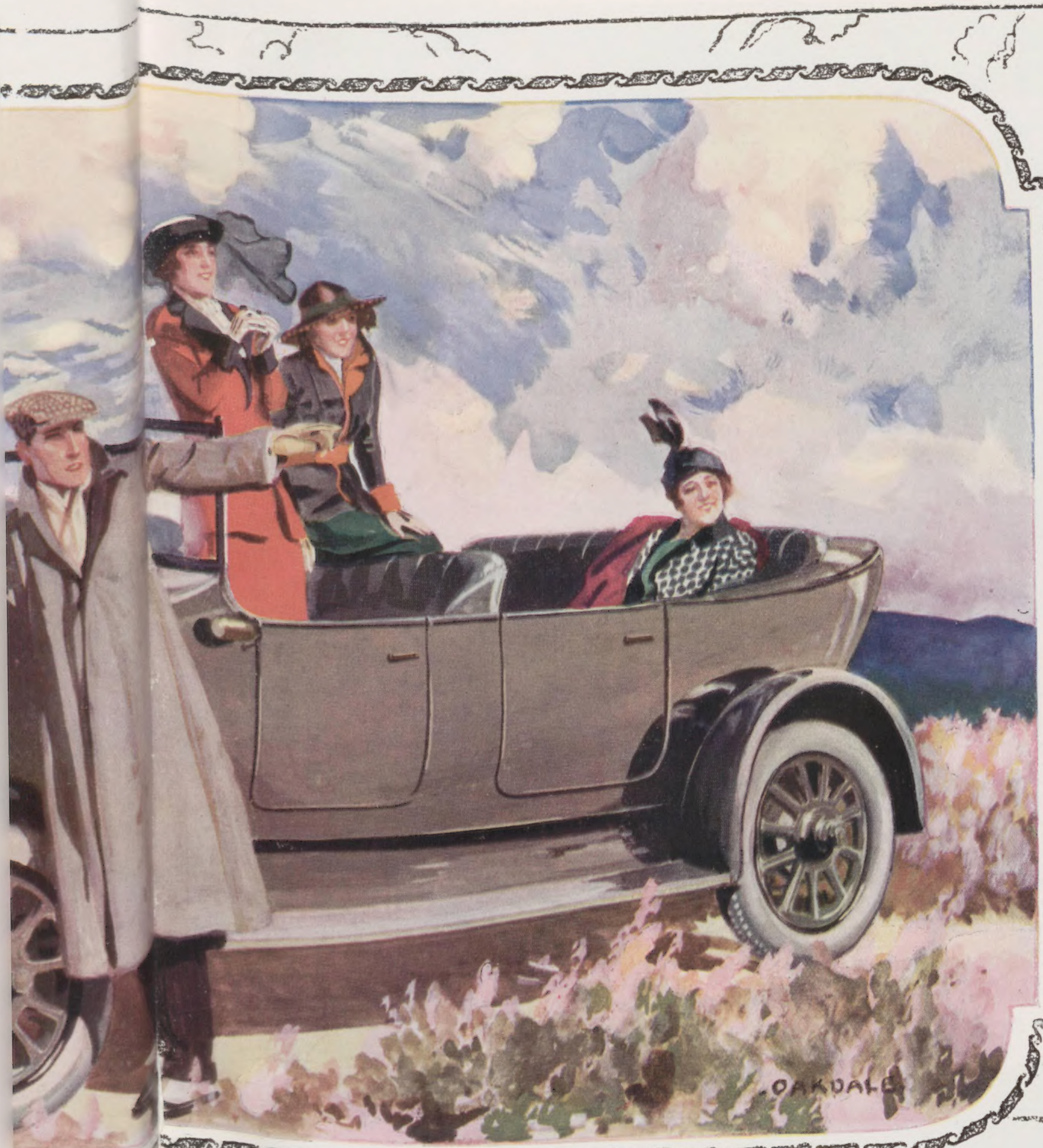
NORTHFIELD, I

Telegrams: "Spee

CHESTER, PARIS, I

OXFORD STREET,

Telegrams: "Austinette



Austin

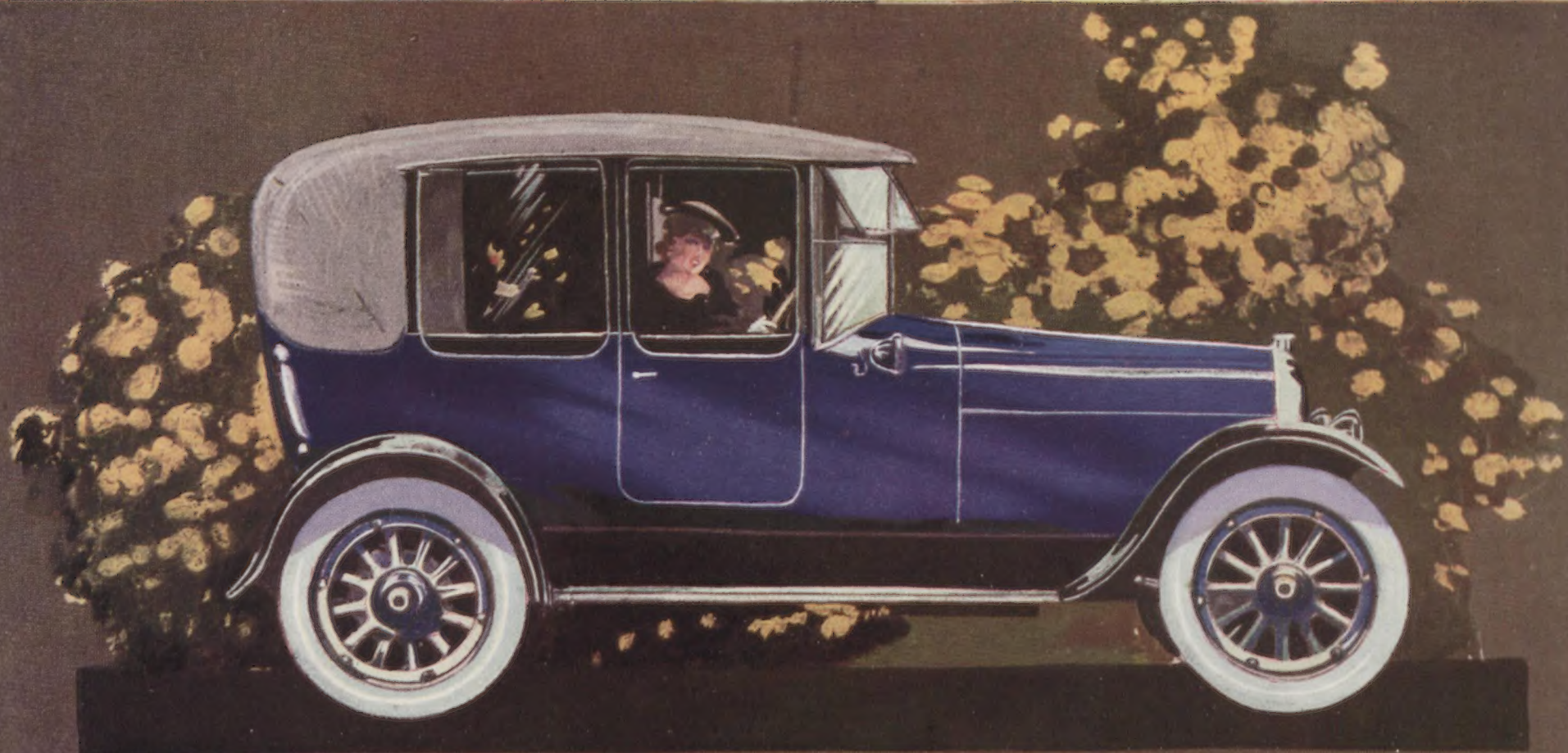
THE trade mark of the Winged Wheel familiar to all readers of Austin announcements is very significant of the firm's activities. Both Wings and Wheels, Automobiles and Aeroplanes, have been built in large numbers at the great Northfield works—the largest of their kind in the British Empire—during the last few years. Precision and lightness of design, a high degree of accuracy in fitting, and the most searching examination and testing of materials have characterised Austin Aeroplane construction and have reacted with splendid effect upon the Austin Car.

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We claim from our years of experience in the production of Artistic Body-work to have evolved the *ideal* equipage for the *owner-driver*. This luxurious Body being fitted with sliding Arm Chair Seats is the acme of perfection and comfort. Enquiries will be appreciated and it will be our pleasure to furnish full Specification and Estimate for supplying the *Eclipse* Body mounted to any make of Chassis

Our exclusive designs of
LIMOUSINE LANDAULETTES, COUPÉS,
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Submitted on application.

W. H. ARNOLD & CO



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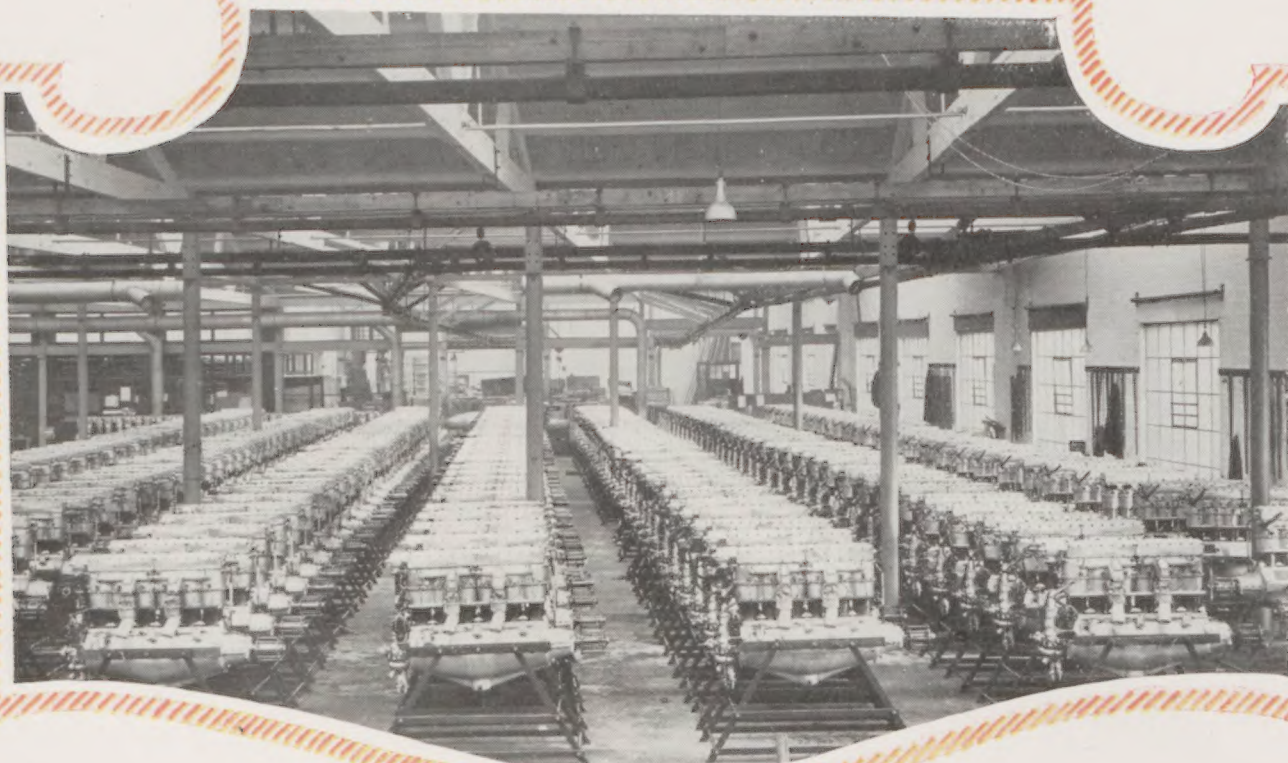
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THE Siddeley Six Cylinder Vertical Aircraft Engine is the basis of the highly efficient six-cylinder engine which will form one of a number of notable features in the new moderately priced motor carriage—the Siddeley 'Six'—of which full particulars will shortly be announced.

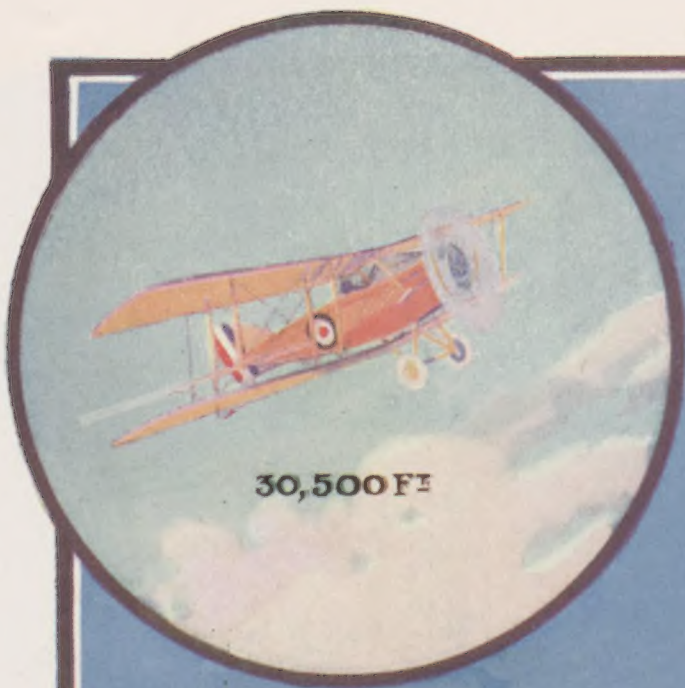
The Siddeley 'Six' will appeal to everyone who desires the best of motoring at a reasonable cost, and especially to those who enjoy the possession of the best. Used either as a town carriage or on the open road it will afford a sense of superiority and satisfaction.

Its extreme simplicity will render it very easy to handle and will reduce its weight—and thereby its running costs—to the desirable minimum. Its moderate price will be due to production in quantity.

The Siddeley-Deasy Motor Car Co., Ltd., Coventry

*Contractors to H.M. Air Ministry; Designers and Constructors
of Aero Engines, Aeroplanes and Motor Carriages*





MT. EVEREST
29,000 FT.

ST. PAULS 365 FT.



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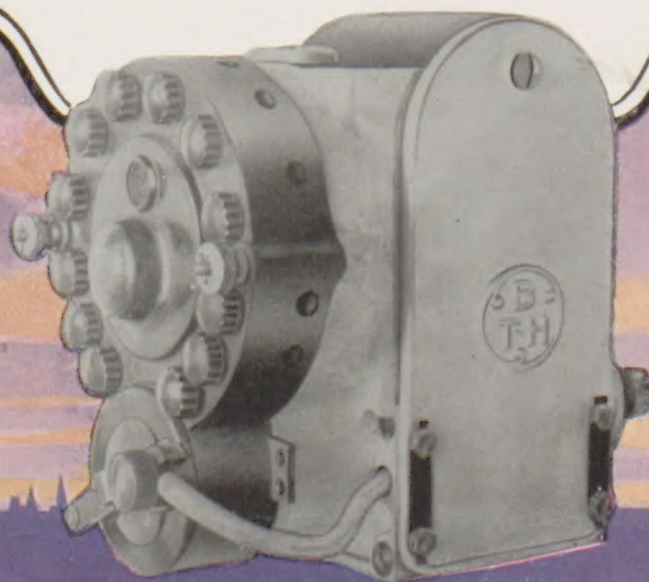
*They were used on the
Napier Engine fitted to the
Aeroplane that ascended
to the RECORD HEIGHT
of 30,500 feet, nearly*
SIX MILES

*Have your Car fitted with
a B.T.H. MAGNETO*



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B.D.

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Every Motorist recognises the danger signal, which must bring to mind the many and varied risks common to motoring. All such risks can best be covered by means of the 1919 EMPIRE MOTOR POLICY issued by the "British Dominions."

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THE 1919
**EMPIRE
MOTOR
POLICY**
COVERS
**ALL SERIOUS
RISKS**

benefits in respect of Personal Accidents. It also provides for extra benefits in respect of Mechanical Breakages, Accidents to Chauffeurs, etc.

The Policy contains many special features, allows for substantial reductions to owners of two or more cars, provides for bonus for no claim, for return of premiums whilst the car is laid up, for short-period rates, cancellation in respect of car, and for many other advantages.

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Everybody who was out of Great Britain in 1916 has, therefore, no claim on anybody for supplies.

The men who saved the country and lived to come back to it can watch the old men, the munition workers and the conscientious objectors drinking their 1916 ration of Whisky, but can get none themselves!

Is this fair control?
Haig & Haig say it is not.

Haig & Haig Five Stars Scots Whisky



IN the Home Market I am very scarce owing to Government restrictions. No new accounts can be opened at present.

MY famous contents are exported in this bottle.

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Egypt is calling for me.

ARE YOU?



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Light

The expression "Light 6" as applied to the CHANDLER is quite as important to-day as when it was introduced five years ago. The CHANDLER idea is to build the finest six-cylinder car and build it light in weight—not too light for durability and riding comfort, but light enough to ensure the elimination of all excess weight without the sacrifice of a single element of strength.


Forty thousand Chandler owners know, better than words can tell, the splendid character of this great car. Do not choose the Chandler for its moderate price; choose it because of its marvellous motor; because of the excellence of the entire chassis; because of Chandler grace of outline and refinement. On no account should you arrive at any decision until you have investigated Chandler Merits; particulars of which will be gladly mailed on request

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IT was the privilege of "Shell" to figure in two of those great crises which governed the entire course of the war.

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"But for toluol, *the war would have been lost,*" declared M. Béranger, Commissioner-General of Petroleum in France. It is toluol that gives its name to the T.N.T. (tri-nitrate of toluol) which was so extensively used by the Allies for shells, mines and bombs. EIGHTY PER CENT. OF BRITAIN'S ENTIRE OUTPUT OF TOLUOL IN THE CRITICAL YEAR OF 1915 WAS SUPPLIED BY "SHELL." "The 'Shell' group," said Sir Frederick W. Black, K.C.B., "gave us that valuable product toluol, without which *we could not have defeated the enemy.*"

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* "The Shell that Hit Germany Hardest," an illustrated brochure by P. G. A. Smith, tells the complete war romance of "Shell." A copy may be obtained gratis by all car-owners upon request to "Shell" Marketing Co., Ltd., 39-41, Parker Street, Kingsway, London, W.C.2



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PARKER ST., KINGSWAY, LONDON, W.C.2

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THIS is the simplest, safest, quickest and best self-filling device in fountain pens. And it is to be had only in Waterman's Ideal, the World's Best Fountain Pen. Get this pen and no other if you want a really efficient self-filler.

THE

Self-filling

Waterman's (Ideal) Fountain Pen

This little lever fills it!

Simply raise the lever, immerse nib in ink, lower lever, and this latest type Waterman's Ideal is filled in an instant. Nothing could be simpler, nothing more effective.

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Mr. Nat Gould

writes:—

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About five years ago I wrote stating what an excellent friend my Waterman's Ideal Fountain Pen had proved. You will be interested to know the pen is still going strong. I have, to date, *written about thirty novels with it*, and it is as good as ever—better I think. I would not part with it for anything. No writer could wish for a more faithful friend.

A leading Bank Manager

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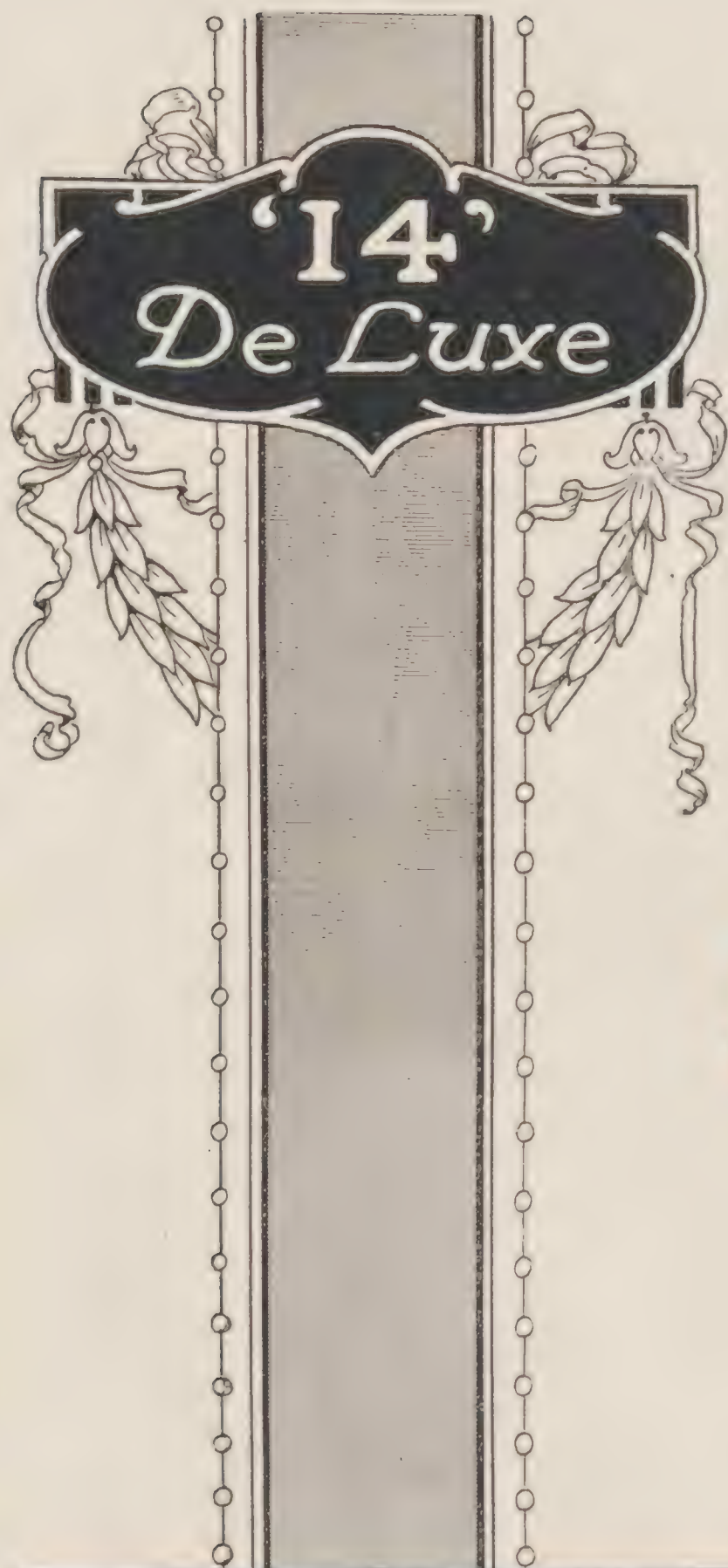
Dec. 6, 1918.

You will be glad to know that my Waterman's Ideal, after nearly *ten years'* constant service, is still giving me absolute satisfaction. Indeed, it has become an indispensable companion. The fact it is still in splendid working order is a proof of the excellence of the pen both in material and workmanship, *but then, it is a Waterman's Ideal.*

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Angus-Sanderson

14-h.p. de Luxe combines every wanted feature in a car, ample power, accessibility, economical maintenance, beauty of outward appearance and comfort in riding. Its equipment includes: Five Detachable Wheels and Five Tyres, Lucas Electric Engine Starter, Lucas Electric Lighting Set and Five Lamps.

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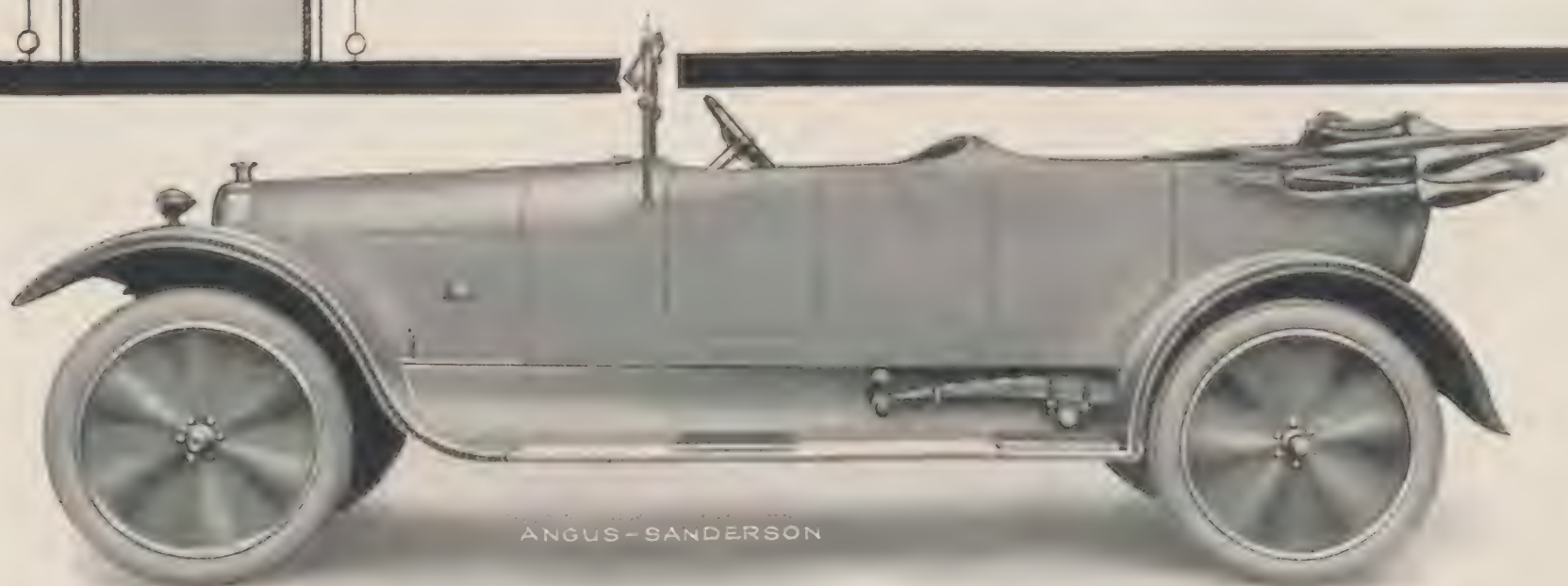
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Shortage of Repair Men

It is still acute, but it would not matter to you, though, if with one simple tool, and no personal exertion beyond picking up the cover, you could change a tyre in a matter of two minutes. It wouldn't concern you at all if you knew that your wife or daughter could do the same thing, **just as easily.**

Are you aware that the WARLAND DUAL RIM permits of this, and, incidentally, effects a great economy in tyres? No strain, and consequently no rim-cutting or broken beads. With WARLANDS you have **nothing to dread.**

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GRAY CO.



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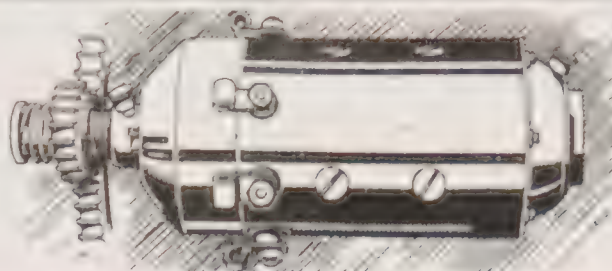


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Press a button and sail away*



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"MAKES ANY CAR A BETTER CAR."**

This drawing of the starter shows it with its toothed wheel in engagement with the toothed periphery of the engine flywheel. The engagement is automatically made when the starter switch on the dashboard is operated.



On the engine firing, the starter is automatically thrown out of engagement. Every starter fitted has an ample reserve of power, and has proved equal to the heaviest demands made upon it.

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WOOD-MILNE MOTOR TYRES

the reason given being that Aurora is a very artistic, far-seeing and punctual lady, and consequently requires tyre equipment that will add to the neatness of her vehicle, and provide speed and every security on her long journey from the Orient to the Occident.

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The secret of SPHINX durability lies in the perfection of material, in conscientious workmanship and skill—in short, in *quality*.

And SPHINX Plugs are BRITISH.

Use the Plugs of proved reliability. So shall your motoring pleasures be enhanced.

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A LANCHESTER CAR OF
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EMBODYING MANY OF
THE MOST SUCCESSFUL
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A CAR OF UNIQUE REFINEMENT,
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THE more strenuous the country, the more exacting the conditions, the more do Palmers prove their sterling worth.

Having tremendously strong rubber-insulated cord foundations, and the toughest of rubber treads, Palmers hold world's track records. This justifies their claim to be the most durable and reliable of all tyres on the road.

PALMER
CORD TYRES

Every Fighting and Bombing Aeroplane that left these shores was fitted with Palmer Landing Wheels and Tyres.

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Barker Bodies and Rolls Royce Chassis recognised as The Ideal Combination



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THAT MAKE BAD ADVERTISEMENTS, AND GOOD BLOCKS
THAT MAKE GOOD ADVERTISEMENTS, GIVE SATISFACTION
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that always
"make good";
and of the

Electric Engine Starter

that makes
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merrily in a
moment.

Operated by the pressure
of a button—*that's all.*

JOSEPH LUCAS LIMITED
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use it so



For Cleaning Hands.

TWINKO
is the new
non-abrasive
hand cleanser
Antiseptic,
deodorant
and hygienic

IN
**DREDGER
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THERE'S nothing simpler or easier to use than Twinko, and yet it cleanses the hands quickly without making the skin rough and red. Just dip the hands into cold or warm water, sprinkle a little Twinko on them, rub thoroughly for a minute or two, then rinse. Your hands will be clean, smooth and white.

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TWINKO.

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H.M. THE KING, PATRON OF THE ROYAL AUTOMOBILE CLUB.

The MOTOR-OWNER



Vol. I.

JUNE, 1919.

No. 1.

EDITORIAL JOTTINGS

Foreword. THE MOTOR-OWNER makes its first appearance in a guise which will at once be recognised as something new in the history of British motoring periodicals. None the less the public will welcome, we believe, a magazine which is printed in four colours rather than in the conventional black and white; more, indeed, would have been seen of colour printing in the past than has been the case but for the fact of the enormous cost which the process entails. The standard which we have set ourselves, however, is of the highest, and we may say that nothing in the way of expense will be allowed to stand in the way of the realisation of our ideals.

Our Aims. Nor is an artistic *format* our only object. THE MOTOR-OWNER will live up to its name, and be conducted in the interests of the man who buys the car, and not mainly, as has too often been the case, for the benefit of the man who makes it. No one will deny that there has been a lack of the sense of proportion in this respect in many quarters, and by no means the least markedly in those papers which are not devoted to motoring alone, but publish occasional motoring articles. For ourselves we intend to place the requirements of the owner first and foremost. In no sense, need we add, does this imply an avowed hostility to the motor industry as

such; it will receive entirely fair consideration in every respect wherein it produces something to the advantage of the private motorist. We shall describe cars, but for the benefit of the buyers, and not because they have been produced by any particular firms; we shall not write up factories, however large, merely because they are factories; on the other hand we would notice even a local workshop if anything emanated therefrom that would assist the private motorist. But in no circumstances will we regard or record the movements of obscure members of the trade as matters of perennial importance; readers of trade papers will appreciate the point.

Our Independence. Another point which we may emphasize in passing is the complete independence of this magazine so far as the proprietary is concerned. No member thereof is connected in any way with manufacturing interests, and no outside or concealed influence shall affect the editorial policy. Nor is THE MOTOR-OWNER attached to any of the existing large publishing houses, but has been launched by a group of private motorists who believe that the car-owner deserves more consideration than he has hitherto received, who are prepared to meet his wants in a way that has not hitherto been existent, and who, at the same time, are bold enough to put forward a more artistic publication than motoring has yet produced.

*Motoring
Politics.*

As for the problems that are bound up with motoring as a whole, and affect car-owners and manufacturers alike, we can only say that in our opinion the time has arrived for motorists to assert their rights more forcibly than has been done in the past. Even before the war there was too pronounced a tendency on the part of the motoring organisations to regard as hopeless any prospect of obtaining redress from the powers that be. During the war itself, of course, patriotic reasons and the autocratic control of "Dora" have made it impossible for the motoring community to promulgate its just claims, and it has suffered more hardly than any other section of the community, despite the colossal and invaluable services which it has rendered to the national cause. Between war-time necessities and peace-time restrictions, however, there is an immeasurable gulf, and it will be a primary purpose of THE MOTOR-OWNER to advocate the removal of every injustice under which the motoring world now suffers, and to demand the fullest recognition from Parliament of the indispensability of the motor vehicle and its capacity for increasing the sum of human convenience. We shall neither tilt at windmills for the sake of tilting, nor urge the motoring bodies to make futile efforts; but at every opportune moment we shall assert the necessity of being up and doing, and of avoiding the too frequently observed policy of "taking it lying down."

*A Hopeful
Outlook.*

At the present juncture, of course, the whole motoring world is passing through a transitional stage, and a little time must elapse before the aspect of affairs is normal. Ere long, however, the amendment of the Motor Car Act of 1903 must be pressed for strongly in many details, and the policy and actions of the Ministry of Transport will need to be watched with the greatest vigilance and no small degree of suspicion. Meanwhile, it may be noted with satisfaction that, the war notwithstanding, there is one factor in respect of which the situation is more hopeful than in 1914. We refer to the formation of the Motor Legislation Committee, a new body which was imperatively required, and of which

we entertain the liveliest hopes. Reform can only be secured through Parliament, but Parliamentary "lobbying" is a matter of especial study, and requires a degree of close and constant attention which the secretaries of the old-established motoring organisations could scarcely be expected to give.

*Specialising
Essential.*

The Motor Legislation Committee, however, has been guaranteed a very substantial annual revenue by the Automobile Association and the Society of Motor Manufacturers and Traders, each of whom has recognised in practical fashion the necessity for delegating political work to a specialised department. The other associations may be represented on the Committee even if they do not contribute to its funds, and, if only they will co-operate with it to the full, and regard it as the executive of the motoring world in respect of all legislative matters, a great forward step will have been achieved, and one that is likely to effect good results in the only way that is practicable under our system of Parliamentary government. From now henceforward motorists must be ever knocking at the door of Parliament, and the Motor Legislation Committee is the one and only means by which this policy can be systematically maintained.

*Road v.
Railway.*

It would be futile, by the way, to regard as evidence of failure the fact that the Ways and Communications Bill passed its second reading, despite the vigorous opposition which the Motor Legislation Committee inspired. The Bill was simply accepted on principle because it was the first item in the new policy of reconstruction, and the House of Commons felt that it had no option but to give the Government a chance. In the actual administration of the scheme, however, there will be ample opportunity for criticism unless full and unfettered powers are given to the road branch of the new Department. There is little more affinity between road and rail than there is between oil and water, and what is admittedly a Railway Relief Bill is certain to operate antagonistically to the road-user if the two interests are not kept apart. Probably no measure in all history was ever launched under auspices so inherently unpromising.

OUR WELCOME HOME.

By MAX PEMBERTON.

THE motorist is very busy these days and the incoming of spring is making a sure appeal to him. In thousands of garages throughout the country there has been an activity unknown since 1914. Old cars are being refurbished; new cars purchased where purchase is possible. For the first time since Armageddon came, many a man has permitted himself to remember what the war cost him upon the high road, and how much he has owed in the past to the internal combustion engine. Visions of a glorious summer temper the particular east wind to the lambs shorn by the greatest tragedy of all times. We shall rediscover England, and we shall rediscover her upon those famous high roads where every village is a welcome memory.

All this is excellent and a proper source of jubilation; but the thinking amongst us are asking questions, and they concern our liberties. We wonder if the ancient hostilities have survived the war; if Mr. Justice Shallow is what he was in 1914; and whether Dogberry is reformed. Looking back over the history of the movement, we cannot forget even at this time the persistent and unreasoned hostility which attended it. Blind to the meanest possibilities of mechanical traction, our sapient parliamentarians did not even permit the car upon the road at all until France and Germany had been experimenting with it for several years. When at last the dangers of this attitude were forced upon them, they passed a belated Bill which hedged us about with so many restrictions that, had it not been amended, the whole industry would have perished at an early stage.

This attitude of temerity naturally awakened a countryside jealous of its equine privileges. Men in dogcarts objected to a vehicle which could travel faster than their historic nags. Farmers' men anathematised the stranger who compelled them to keep their waggons upon the right side of the road. As Sir Arthur Conan Doyle told us, we were back in the days of the barons, who levied a tribute on everyone who entered their territory. Justices uttered pious platitudes and imposed ridiculous fines. Dogberry himself found a new occupation and lurked in the shadow of hedges. There was more lying about us in a month than Ananias could have achieved in a year.

All this, of course, is ancient history and its only interest at the moment concerns the conditions under which we are now about to reappear. Has war altered the attitude of Justice Shallow towards us, and does Dogberry view us in a new light? I doubt the optimists, and believe that more surprises are in store for them. Certainly the turmoil of war awakened no latent sympathies in the bosom of the local police. We had the old ridiculous stories told in many a country court even while the guns were thundering in Flanders. Justices frowned upon us and talked nonsense about the perils of thirty miles an hour. The mob itself hailed with a savage delight the final edicts which drove the private car from the high road.

Now it is coming back by the hundred thousand, and we have to ask ourselves what kind of a greeting it will encounter. That Authority itself does not even yet understand the future of the movement is clearly proved, I think, by its dubious Ways and Communications Bill, which threatens to put our fortunes into the hands of the Railway Director and to leave us such crumbs of concession as he may fling to us. The Motor Acts of 1896 and 1903 are unchanged, and all the old disabilities remain.

We may still be fined because a tempest has blown out our rear light. Trivial offences committed many years ago may still disfigure our licences and impose heavier fines upon us. Such powers remain with men who, even though they drive cars themselves, have never been unwilling to heave half a brick at the stranger; nor do we hear of any particular agitation to have such powers repealed, though something admittedly is being done where the Ways and Communications Bill is in question.

The plain fact is that as a body we are still hopelessly without leadership. The Automobile Association is an admirable organisation, and its attempt to warn us in the matter of the contemplated legislation is excellent; but it is impossible to contend that the A.A. is in any sense our Jockey Club, or even a committee of a motorists' M.C.C. For years some of us have pleaded for the establishment of a council which shall be really representative and shall speak with authority upon all that concerns our welfare. We have desired to create a body

whose influence, alike in Parliament and upon public opinion, would be paramount.

But we have met with no encouraging response. The motorist is in this respect like the much discussed middle-class martyr: he grumbles and he pays. The inequalities of legislation are pleaded, not at Westminster, but before unsympathetic benches, who are waiting merely to fine us. There is none to point out to the people what motor traction is going to mean and why some of the shackles should be struck from it.

This is not to maintain that there should be no reasonable control and that our will should also be our law. Sane men are all for sane legislation which will really prevent dangerous driving and deal sternly with the hooligan. But when this is achieved, they ask at the same time that the national imagination shall be awakened and that Parliament, at any rate, shall realise the momentous nature of the industry with which it is dealing.

Already we hear the expected stories of the fifty-pound car. We know that in a few years' time there will be few in this country who will not be able to possess some sort of a motor vehicle and to discover the precious heritage for themselves. The idea that motoring is an undemocratic pastime has vanished long since, and few can now fail to discern the place it must take in the story of transport. America has already learned something of this, and few Englishmen who have gone forth upon her great high roads have failed to be impressed by the magnitude of her effort.

Men own cars there as we own bicycles here. The week-end spectacle is often that of thousands of vehicles following one another upon a new high road and driving to destinations where palatial hostelries await them. We may shun these motley gatherings, but none the less appreciate their significance. For we shall also be imitating America before many years have run—sending cars by the hundred thousand upon every highway, rebuilding ancient inns, pushing even into the wilderness, and forgetting, it may be, that such a thing as a railroad exists. And all this we must do, it would appear, in face of the old restrictions and to the great delight of Shallow aforesaid. There is no promise of a greater freedom or of that liberty we should have won. The police are going out in their thousands to wait for us; the justices are mouthing the measure of the fines.

Some there are who say that this kind of talk is premature, and that there is really no need to

worry overmuch about the car, since everyone will be flying in 1925. For myself, I doubt the truth of the contention. The future of aviation will be full of wonders and no man may prophesy with safety; but I have the belief that, in the main, man will cling to the earth rather than venture into the air, and that, if it come to an alternative, the car will win in the long run.

Few, I think, really enjoy flying as a pastime; but there are very few who do not deem motoring the greatest of all pastimes. Time may change the view, and it is quite conceivable that we shall desert the earth and take to the heavens; but when that day comes, we may be very sure that Dogberry will be somewhere in the clouds and that Shallow will be watching him with a telescope.

As a race we have many qualities. We are indeed, as Mr. Bonar Law stated last year, "a great people." But our disposition to interfere with the enjoyment of our neighbours is matchless, and in a dogged adherence to ancient traditions we are without rivals. So, whether it be the earth or the air, we shall still hear the ancient platitudes and the prisoner will still leave the dock with a very considerable stain upon his character.

Post-Bellum Chauffeurs.

MOTORISTS who are awaiting delivery of a new car are naturally speculating as to the prospects of obtaining a chauffeur of the after-war type, and the amount of wages he will expect. During the war, the driver of the W.D. or R.A.F. has developed a somewhat swollen head, and post-bellum conditions make for an increased wage. At the present time a married driver expects from £2 10s. to £3 per week with rooms. The single chauffeur is a £2 per week man, while an extra good man may even rise to £3 10s. per week. Owners should have little difficulty in obtaining competent drivers, as many have been trained during the war for military purposes, and the supply exceeds the demand.

In view of the servant problem, there is undoubtedly a good opening for a man who will combine the job of handyman and chauffeur. There is a shortage of servants, and a superfluity of chauffeurs; hence, the combination of servant and chauffeur will be a great asset. The handyman-chauffeur should command a wage of from 30s. to £2, with accommodation. Doctors would probably be glad to find an anaesthetist who can drive a car.

How Soon?



For nearly five years there have been no race meetings at Brooklands. Motorists are wondering when the glories of the track will be revived, and meanwhile one of our artists has drawn a spirited presentment of what enthusiasts may see when their hopes are realised.

A £2,000 CHASSIS.

WHEN most of the pre-war types of motor-car have been increased in price by fifty to a hundred per cent., and thereby reached formidable figures in the case of the large and expensive models, it might be thought that there was little room for a new creation which should out-Herod Herod in respect of costly production and design.

The fact remains, however, that a British chassis will eventually be forthcoming which will be offered to the world at no less a figure than £2,000. It would be easy to suppose, of course, that the people responsible for its production were merely out to create a factitious demand for a luxury car pure and simple, and proposed to overload the vehicle with all manner of superfluous fittings, such as those to which Eastern potentates are wont to aspire.

None the less, the very opposite will be the case. It is the aim of the designer to produce a chassis which shall be the most workmanlike and serviceable that was ever built, and shall fulfil the double purpose of pleasing the owner-

driver and the professional chauffeur in equal measure, by reason of the fact that the car will require the minimum of attention as to driving, upkeep, and even replenishment.

Of the ways in which this is to be accomplished we had hoped to be able by now to furnish full details, as the designer unfolded his ideas to us early in the present year, at a time when he was expecting an early release from war-time obligations. The contract, however, for his particular species of "munitions of war" was renewed, owing to its peculiar merits, and the time is not yet ripe for a description of the many novel and highly interesting features of the chassis.

But this much may be said with emphasis: their enumeration astounded us no less by their practicality from the motor-car engineer's point of view than by their claims on the attention of the owner-driver. The car is to be no freak, but the embodiment of a serious attempt to design a chassis which shall be as perfect in every part as human ingenuity can make it, while the designer himself is a man of exceptional experience, originality and skill.

THE OLDEST INN IN SURREY.



Photo by]

[C. L. Freeston.

Chiddingfold, which provided some of the windows for Westminster Abbey, is not only a village of much picturesqueness, but boasts the oldest inn in Surrey—the quaintly built Crown.

AN INTREPID LADY DRIVER.

MISS MURIEL THOMPSON'S EXPERIENCES.

THOUSANDS of women have learned to drive a motor-car since August, 1914, and a certain percentage, which one need not attempt to define, may readily be said to have acquitted itself admirably. The remainder however, offers a somewhat unwelcome contrast to those ladies who proved themselves to be skilled drivers before the war began, and had gained their experience over many hundreds of miles by driving their own cars in the best of all schools, the road itself.

Prominent among the latter class is Miss Muriel Thompson, certainly one of the best lady drivers who ever lived. Her handling of the well-known Austin "Pobble" was particularly admired at Brooklands, where she competed in many inter-club events as a member of the Berkshire Automobile Club. As a matter of fact, she was particularly adept in blindfold races, winning every one in which she competed, an achievement which was not merely due to her driving skill, but also to the exercise of reason.

In these events competitors had to turn their cars round, after being given the word to go, and then to drive to the finishing point, which had been indicated to them before they were blindfolded. They had thus the triple task of turning their car round to the correct degree—

that is, exactly a half-circle; of maintaining a perfectly straight line towards the goal; and of estimating the distance which they had to travel while totally unable to see.

Anyone who ever attended a gymkhana which included a blindfold event will have noticed that the bulk of the competitors proceeded timidly throughout; that nine-tenths of them failed to describe the perfect half-circle, and turned inwards to the edge of the track; while the very few who succeeded in keeping along the track were unable to measure in their minds the distance they had to go, and either went too far or not far enough.

Miss Thompson's method, however, was entirely different. When ordered to start she boldly swung her car round, seemed to know by instinct when she had turned into the straight, and then drove at full speed towards the finish. By normal driving, therefore, instead of attempt-

ing to feel her way, as the others did inch by inch, she was able not only to keep her car straight, but also to preserve a mental estimate of the distance between the start and the finish. So well, indeed, did she gauge the niceties of the situation that she invariably pulled up the car at or near the right spot, and was driving throughout almost as accurately as if she had not been blindfolded at all.



Photo. by]

MISS MURIEL THOMPSON.

[Swaine

When the war broke out, of course there was an end to all motoring sports, but it was not very long before Miss Thompson found a new field for her driving skill and her patriotic zeal alike. She joined the First Aid Nursing Yeomanry, which was the first women's organisation to go to the Front. The British War Office,



MISS THOMPSON AT BROOKLANDS.

however, at that time would have no truck with women drivers, and the work of the corps, in the first instance, was associated with the Belgian army. Miss Thompson went out in February, 1915, as a motor ambulance driver in connection with a hospital which the First Aid Nursing Yeomanry had established at Calais.

At that time the Belgian army was practically destitute, and the F.A.N.Y. ambulances were not only welcomed in respect of their work



WITH AN AMBULANCE AT THE FRONT.

among the wounded, but also from the fact that the drivers used to get up early in the morning, load up with socks, cigarettes, etc., and drive out to the Belgian lines.

In due course the work which the First Aid Yeomanry was doing attracted the attention of the King of the Belgians, and he personally bestowed on Miss Thompson and another member of the corps the Cross of the Order of Leopold II. for bravery under fire.

At the beginning of 1916 the British Red Cross Society gave the First Aid Nursing Yeomanry the first opportunity ever granted to a regularly constituted women's convoy of working for the British Army. The convoy supplied the personnel for a British Red Cross motor ambulance column at Calais, and Miss Thompson worked untiringly in this connection for two years as second in command.

In January, 1918, however, she went up to St. Omer as commandant of the F.A.N.Y. convoy, and stayed there until the following September, when she returned to England and joined the Women's Royal Air Force as recruiting officer, a position which she still holds and discharges with conspicuous ability.

It will be noted that Miss Thompson wears three ribbons on her F.A.N.Y. tunic, and they emphasize the fact that driving up to the lines was by no means the only risk which had to be encountered. Calais, for example, was subjected to air raids practically all through the war, firstly from Zeppelins and subsequently from sustained and systematic aeroplane bombardments. Miss Thompson, of course, was on duty on all these occasions, and had many narrow escapes. Then there was one Hun

raid, moreover, which lasted all the night through, and Miss Thompson worked with so much bravery and devotion that she was awarded the British Military Medal and the French Croix de Guerre.

This raid was over St. Omer, in May last. Four of the raiders' bombs fell directly on to the hospital and took away a floor within two feet of where two of the F.A.N.Y. drivers were standing, but singularly enough they escaped unhurt. Many people in the town, however, were killed or wounded.

Ambulance work, in these circumstances, was naturally dangerous, more especially as one of the Hun bombs fell on an ammunition dump and blew it up.

The First Aid Nursing Yeomanry, though a small body, were awarded no fewer than 17 Military Medals, 26 Croix de Guerre, and one Legion of Honour during their period of work in France and Belgium, and no one will dispute Miss Thompson's claim that these figures constitute a very fine record.

BORMES-LES-MIMOSAS.

A Beauty Spot of the Unknown Riviera.

NO more hackneyed region could be named than "the Riviera" as ordinarily understood. It is like the church of St. Mark's at Venice—even those who have never seen it know all about it, from pictures or descriptions or both. But there is another Riviera that is quite

to Hyères, it is true, and there is even a slow-running narrow-gauge railway belonging to another company along the coast from Hyères



A VIEW FROM THE HILL, WITH THE ILES D'HYÈRES IN THE DISTANCE.



THE GRAND HOTEL AND GROUNDS.

to St. Raphael, but for every one who uses the latter there are thousands who go inland on the main line, bound for Cannes, Nice, Monte Carlo or the other resorts of the Côte d'Azur which are household words.

Now this stretch of coast that is left aside

unknown to the average traveller, and yet no less attractive in physical outlines than the stretch of coast between St. Raphael and Ventimiglia, and the fact that the one is practically left alone while the other is world-famous is but another of the countless illustrations of the way in which travel knowledge has been built up on the railway.

For the great P.L.M. line to Nice and Monte Carlo, though it goes southwards to the sea at Marseilles and Toulon, turns inland for a time and does not retouch the coast until St. Raphael is reached. There is a short branch line



A FLANK VIEW OF BORMES-LES-MIMOSAS.

by the main line is one long series of beautiful little bays and peaceful havens, with hardly an hotel to be found along the whole route. There are places innumerable at which one might build a villa with the certainty of enjoying entire peace amid the most

delightful surroundings. In a few instances this course has already been followed; indeed it may be news to many to learn that for several years

June, 1919

before the war a well-known English automobile manufacturer lived on a charming little bay in this quarter and thought out all his new designs far from the busy haunts of men.

There is just one spot, however, which was becoming moderately well known by 1914 to



THE RUINED CHATEAU.

seekers after quiet, and that is Bormes-les-Mimosas. It stands some way back from the coast, on a well-wooded hillside, and was originally, in point of fact, a town of the ancient Gauls. Its present aspect, so far as the extant buildings are concerned, may be gathered from the flank view photograph on the previous page.

But it is not the buildings which are the attraction of Bormes-les-Mimosas, but the panoramas which are to be enjoyed both from the terrace on which stands the Grand Hotel, above the village, and better still from the summit of the hill behind. Railway travellers reach the foot of the hill in eleven miles from Hyères and then take a conveyance by a new road up to the pleasant Grand Hotel, which has its own park and a charming terrace, and the car-owner for the most part follows the same line of route, but without a break. The scale of what to expect may be gathered when it is mentioned that Bormes itself has rather over two thousand inhabitants, subsisting on the cork industry in the main, while the hotel itself has sixty beds. Except by car, locomotion is virtually confined to the little railway in the plain below, and as the climb is a more or less toilsome one for the ordinary wayfarer there is no possibility of Bormes ever becoming a place of bustle. On the other hand the hotel itself is of good class, and one may sojourn here in tranquillity and comfort. Mimosas and violets bloom in great prodigality and beauty in the immediate vicinity of the hotel, which stands

about 600 feet above the sea. The outlook from the terrace is wonderfully varied. Immediately below is the quaint old village, with narrow streets and ancient archways; then the hillside slopes seawards, but between the plain of Batailler and the blue sea there is a line of foot hills which prevent the expanse from becoming monotonous; and beyond, in the Mediterranean itself, are the Iles d'Hyères, seen to great advantage from the hotel plateau.

Hard by the hotel was a ruined 13th century chateau, which had been bought, however, by a private individual in the spring before the war and was in process of restoration. There is an amplitude of pleasant walks in the neighbourhood of the hotel across well-wooded hillsides, but the best of all is the climb right up to the top of the hill immediately behind, from which one may survey a vast expanse of rolling country with no mean claims to picturesqueness.

Excursions further afield, of course, are limited to the narrow-gauge railway except to the possessor of a car. The line is convenient enough if one merely wants to run out to Le Lavandou, Le Canadel, or other sweetly situated hamlets on the coast within a dozen miles, but to journey all the way to St. Raphael and join up with the main line is extremely tedious, for the train takes three hours to do forty miles. With a car, however, one may explore the crenellated coast at will, run out to Hyères or Valescure for golf, or even get to



THE ROAD UP THE HILL.

Monte Carlo and back within the day. When the effects of the war have disappeared it is more than probable that Bormes-les-Mimosas will increase in popularity among those who desire to betake themselves off the beaten track without incurring the discomforts of primitive accommodation; but its situation is such that it can never become vulgarised.

FOUNTAINS ABBEY.

The Most Picturesque Ruin in England.

RICH as this country is in castellated and ecclesiastical ruins, it may be averred with but little fear of dissent that Fountains Abbey is the finest of them all. Those who know it well are never tired of visiting it if touring in the North, for

for example, many years ago will remember the grievous, though inevitable, effect of the stripping of the walls when Colonel North presented



OUTSIDE THE GATES OF STUDLEY ROYAL.

there is almost sure to be someone on the car who has not previously had an opportunity of contemplating this magnificent monument of the past. It is readily accessible, being reached in $2\frac{1}{2}$ miles by a fine high road from Ripon. At the gates of Studley Royal, the Marquess of Ripon's beautiful demesne, one leaves the car outside, and from there a delightful walk brings one to the Abbey in a few minutes.

Like all great ruins, Fountains Abbey has to be kept free from the destructive effects of ivy; those who knew Kirkstall Abbey,



THE ORNAMENTAL WATER, STUDLEY ROYAL.

it to the nation and definite steps were taken for the preservation of the building. But the grandeur of outline which Fountains Abbey can show is such that it remains picturesque to an extraordinary degree. It is remarkable, too, for the amount of the original structure which is still extant; in this respect, indeed, it

may be doubted whether it has a rival.

But if the exterior strikes the eye at once by its completeness, the interior leaves one spellbound. The cloisters and the great refectory are perfect in their completeness and architectural beauty alike—so much so, in fact, that it



FOUNTAINS ABBEY.

is impossible to realise one is visiting a ruin until one has left the basement and regained the outer air.

Fountains Abbey, it may be added, is well known as a subject of peculiar difficulty for the photographer. Its vast area and the great height of its splendid tower necessitate a lofty or a distant "stance" for the camera. In the former case the tourist seeking to secure a fitting memento of the glorious pile finds himself among the trees, while if he descends to the ground level and stands on the great sward at the rear of the building there are other trees behind him which impair the actinic value of the light to an extent for which he may be unprepared. The bare stone, moreover, affords no useful contrasts of light and shade, and many a plate that has been carried away in hopefulness has produced results under development that have proved distressing. The ordinary spectator, nevertheless, has no need

to trouble himself on that score, and to the photographer the memory of the noble edifice is ineffaceable and satisfying, even if his prints are failures.

And as with the Abbey so with the setting. The park of Studley Royal is truly superb, and a perfect example of a feature in which England is pre-eminent. In no other country are there so many broad domains belonging to the great or so many to which the public has ready access. Of these there are some more spacious than Studley Royal, but no park is more beautifully kept or so eye-resting in every part. Cheerfully would one set off at any moment from the south on the long drive to Yorkshire to show a chance American or Colonial visitor this bright jewel among English landscapes and the stately ruin which it enshrines.

THE OLD MINT HOUSE.

IF not exactly "the grandest sight in Pevensey," as the proprietor would have us believe, the "Old Mint House" is none the less a local curiosity of more than ordinary interest. It stands right under the shadow of the outer wall of the ruined Pevensey



THE OLD MINT HOUSE AT PEVENSEY.

Castle, and is therefore easily found by any motorist touring along the Sussex coast.

The house was occupied in the 16th century by one Andrew Boorde, who is supposed to have been the original Merry Andrew. "After his studies at Oxford," according to Hannah's *The Sussex Coast*, "he joined the Carthusian Order, but only to find that his nature was much too funny for that sad rule, and, wandering about to various places on the Continent, he graduated

in physic at Montpellier in 1542. It was his custom to harangue the people at fairs and markets, endeavouring to draw their attention to his medical skill. Though his brother was their vicar, he had a poor opinion of the people of Pevensey, or Gotham, as he calls the place. With laboured humour he accuses their wise men of executing an eel by drowning and their grand jury of finding a man guilty of manslaughter for stealing a pair of leather breeches. He died in Fleet Prison in 1549."

The Pevensey Mint existed until the reign of Stephen, and may or may not have been on the site of the "Old Mint House." The interior of the building is timbered in solid oak, with carved panelling and occasional frescoes on the plaster. One of the rooms is said to be haunted. The present owner has two strings to his bow, as he makes a charge for admission to the house and also sells pottery and other commodities.

Of Pevensey itself the fact may be recalled that it is the spot at which William the Conqueror landed in 1066.

It is stated that in 1914, 6,992 passenger cars were imported to England from America, while in 1918 only 398 arrived.

* * *

When the British post-bellum cars arrive in Australia the Automobile Club of that continent is considering the question of holding a 1,000 miles reliability test. A trial of this kind was under consideration when war broke out, but was, of course, deferred.

* * *

Apparently there is still plenty of petrol in the world, even if some of it is still in the ground. It is estimated that the quantity of the unmined supply of petroleum in the United States of America varies from 5,763,000,000 to 24,500,000,000 barrels (42 gallons per barrel).

CARS IN PROSPECT.

Some Notes on 1919 Models.

ALMOST it goes without saying that the present position of affairs in the automobile world is unique in motoring history. Somewhere about this time of year the motorist has been wont to expect delivery of the car which he had selected at the annual show of the preceding winter, and if he had deferred his order until later, he at least

vance, has been denied them, and the situation surpasses in novelty even the early days of the present century, when every car that came from France was sold at a substantial premium. For



THE ARROL-JOHNSTON "VICTORY" CAR.

knew all about the car of his choice and a great many other models also.

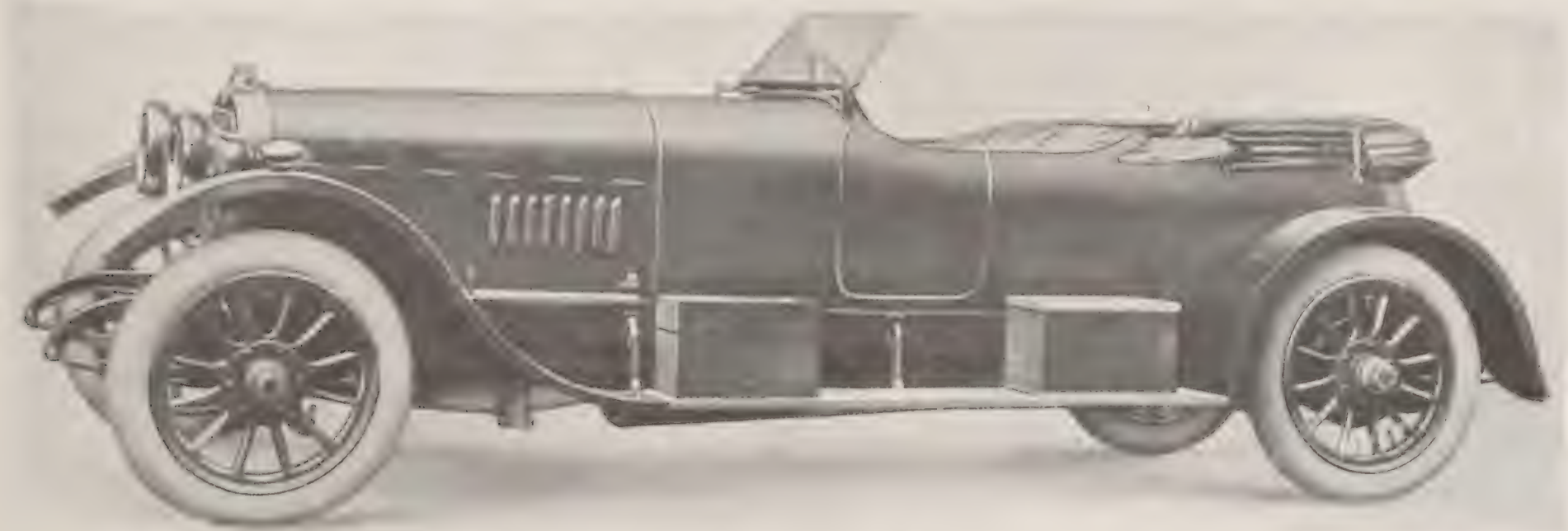
Now, alas, the only people who have any chance of securing cars before summer is with us are those who placed their names upon a waiting list many months ago; by their faith



A 20-24 H.P. DE DION COUPÉ LIMOUSINE.

then the dominant factor was not lack of foreknowledge as to what one was buying, but simply the limitation of output from the works.

In these circumstances it is only possible to discuss the cars of 1919 in prospective fashion, as there is scarcely a single new chassis to be seen in London. Save for one or two firms, such as the Crossley and Vauxhall, which have been building cars for official purposes during the war, automobile manufacturers generally may be divided into three classes: (1) Those who, to save time, have elected to reproduce



THE 24 H.P. SIX-CYLINDER SUNBEAM, WITH SPORTING BODY.

they will benefit as to time, and doubtless in other respects also, but the old glamour of weighing up the pros and cons of chassis innumerable, all temptingly displayed in ad-

their 1914 patterns anew; (2) those who set to work on new designs as soon as the armistice was signed; and (3) those who have been too busy even to think about designs, and as yet

have made no announcement whatever as to their intentions.

It is only with the first and second classes, of course, that we can deal at the present moment, and only by way of summarising the salient details of the promised cars; comment upon models that we have not tried nor even seen is out of the question. The would-be buyer of a new car at an early date must needs



THE 20-25 H.P. VULCAN.

be an opportunist pure and simple, and, subject to price considerations, must be content to lay hold of anything he can rather than attempt to pick and choose. *Ad praesens ova cras pullis sunt meliora*—"Eggs now are better than chickens to-morrow."

But a word may be said in passing as to the absurd trade custom of regarding agents as the



THE 12-16 H.P. FIAT.

only persons to be considered. One reads such announcements as that "the whole of our output for 1919 has been sold," or that "we can take no orders for 1919." This might be taken by the uninitiated to imply that there is no earthly chance of obtaining a car of the particular makes concerned, whereas all that it does mean is that agents have taken up the entire output and left nothing for the private person to order directly from the works. But the agents may, on the one hand, have ordered only as many cars as they had immediate customers for, or on the other, they may have

ordered a still larger number as a speculation—and a very reasonable speculation under present conditions. Consequently it is always worth while to enquire from an agent as to whether he has anything to sell, on the chance of his not having completely filled his own order book.

Summarised below will be found the essential points of the cars of which details are more or less available. The stereotyped features have been eliminated. Where particulars as to prices or any dimensions are not stated it is to be understood that these have not been specified by the makers. Among the special tendencies which characterise the new models are an increased adoption of overhead valves, detachable heads, cantilever suspension, the spiral bevel drive, central change-speed control, the reduction of lubricated parts, the elimination of grease-cups, and the driving of the speedometer from the constant mesh pinions of the gear-box.

ABRIDGED SPECIFICATIONS.

A.B.C.

12 h.p. two-cylinder horizontally opposed, 3.6 ins. × 3.6 ins., air-cooled. Overhead valves. Carburetter of A.B.C. double choke type. Clutch, cone type, Ferodo-faced. Four forward speeds. Transmission by shaft and bevel drive to back axle. Springing without shackles or lubricated parts. Tyres, 700 mm. × 85 mm. Wheel-base, 8 ft.; track, 3 ft. 9 ins. Price with hood, wind screen, dynamo electric lighting set, and two-seater body, £195.

Albert.

12 h.p. four-cylinder, 68 mm. × 103 mm. Cylinders *desaxés* by 7/16 ins. Overhead valves. Single plate clutch, Ferodo-lined. Mechanical engine-starter, mounted on clutch-shaft and operated by pedal. Four forward speeds, with central control. Spiral bevel drive. Both brakes on rear wheels. Petrol consumption 35 miles to the gallon. Detachable steel wheels, 710 mm. × 90 mm.

Angus-Sanderson.

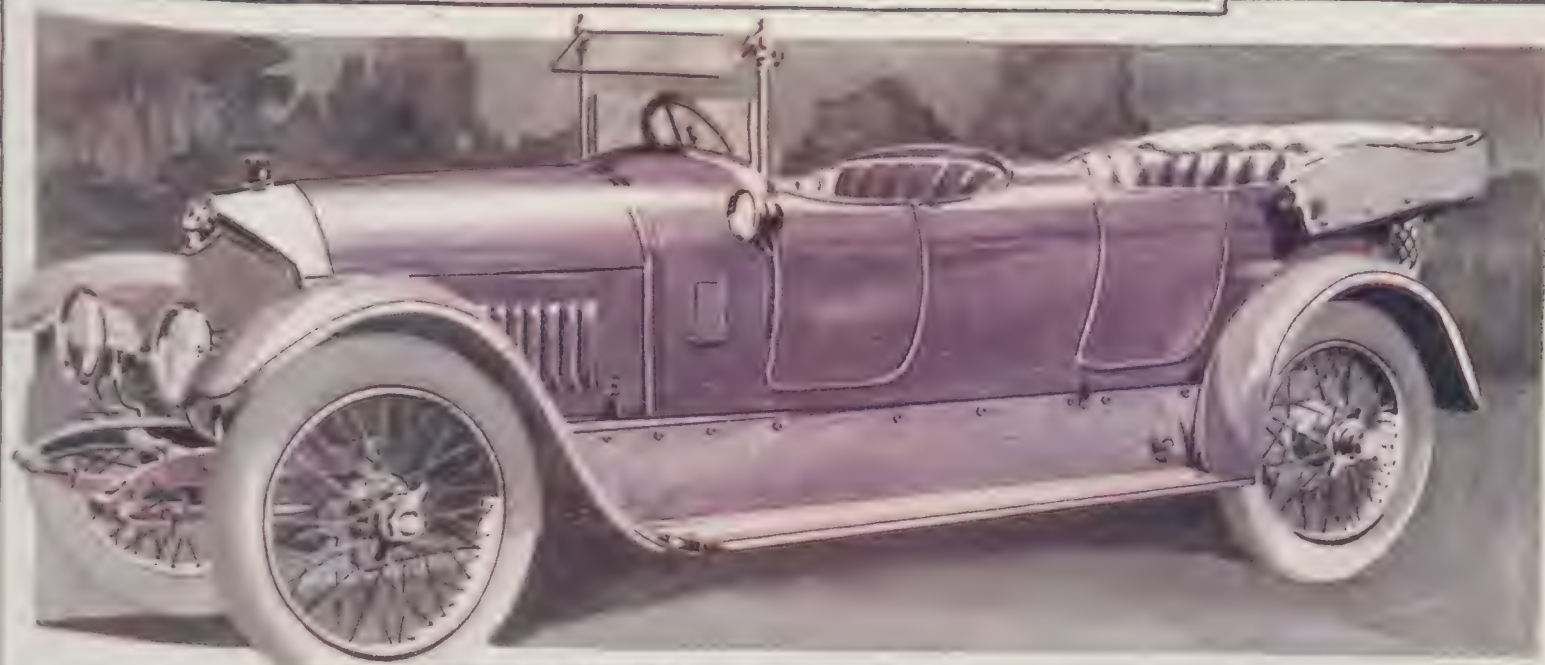
14 h.p. four-cylinder monobloc, 76 mm. × 127 mm. Cylinder heads detachable. Counter-weighted crankshaft. Pistons of the Ricardo separated head slipper type. Three forward speeds. Cantilever rear springs. Brakes all on rear wheel drums. Dynamo lighting and engine-starter. Disc wheels. Wheel-base, 9 ft. 8 ins.; track, 4 ft. 4 ins. Price, with standard four-seater body, £450.

Arrol-Johnston.

Four-cylinder monobloc, 75 mm. × 150 mm. (styled "Victory" car). Overhead valves and detachable head. Central control. Four forward speeds. Electric lighting and engine-starter incorporated in design of engine. Spiral bevel gearing to rear axle. Cantilever springs to rear. All springs automatically lubricated. No grease-cups whatever in chassis. Wheel-base, 10 ft.; track, 4 ft. 8 ins. Price—chassis, £600; complete car, £700.

Austin.

20 h.p. four-cylinder monobloc, 95 mm. × 127 mm. Single-plate clutch. C.A.V. engine-starter, with detachable handle in case of emergency. Pedal-operated rear brake and hand-operated shaft brake. Clutch and brake pedals adjustable for distance, and driving seat for length. Fuel supply by gravity through an improved type of Autovac secondary tank. Four forward speeds. Change-speed and hand brake levers operated by left hand. Price—chassis, £395; standard streamline body, £495; four-seater coupé model, £595; landaulet model, £625.



Specially drawn by]

1.—THE 25-30 H.P. CROSSLEY.

2.—THE 20 H.P. AUSTIN COUPÉ (OPEN).

3.—THE 20.1 H.P. STAR TOURING CAR.

NEW MODELS FOR 1919.

["The Motor-Owner."]

Buick.

Six-cylinder, $3\frac{3}{8}$ ins. \times $4\frac{1}{2}$ ins., valve-in-head type. Petrol supply by vacuum feed from rear tank. Air regulator on dashboard. Three forward speeds. Engine-starter, Delco. Multiple disc dry-plate clutch. Ignition, Delco generator and storage battery. Both brakes operate on rear wheels. Cantilever springs to rear. Wheel-base, 9 ft. 10 ins.

Cosmos.

Three-cylinder radial, disposed about the crank-case in an inverted "Y," 75 mm. \times 75 mm., air-cooled. Aluminium pistons. Cosmos-Ware carburetter. Three forward speeds. Spiral bevel drive. Wheel-base, 7 ft. 6 ins.; track, 3 ft. 10 ins. Price, with three-seater body, £200.



THE 10 H.P. DOUGLAS LIGHT CAR.

Crossley.

25-30 h.p. four-cylinder, cast in pairs, 101.6 mm. \times 140 mm. Valves entirely enclosed. Aluminium pistons. Five-bearing crankshaft. Four forward speeds. Transmission brake-drum fitted with radiating fins to prevent overheating. Autovac system of fuel supply; 18 gallons tank at rear of chassis. Aluminium clutch, faced with Ferodo. Differential removable without dismantling the axle. Wheel-base, 11 ft. 3 ins.; track, 4 ft. 6 ins. Chassis price, £850.



DETACHABLE CUSHIONS ON THE 10 H.P. DOUGLAS.

Daimler.

30 h.p. six-cylinder, 90 mm. \times 130 mm., Daimler sleeve-valve engine. Daimler automatic carburetter. Lanchester patent vibration damper. Underhung Lanchester worm gear. C.A.V. engine-starter. Wheel-base 11 ft. 9½ ins.; track 4 ft. 8½ ins. Price, chassis, with C.A.V. lighting set, speedometer with mileage and trip recorder, bulb-horn, head and tail lamp brackets, and tool kit, £1,060.

45 h.p. six-cylinder, 110 mm. \times 130 mm. Wheel-base, 12 ft. 2 ins.; track, 4 ft. 8½ ins. Price, chassis, with equipment as with 30 h.p. type, £1,300.

De Dion.

12 h.p. four-cylinder, 70 mm. \times 100 mm. Victrix magneto. Dynamo lighting and engine-starter. Four forward speeds. Wheel-base, 9 ft. 2 ins.; track, 4 ft. Price—two-seater, £390.

20-24 h.p. four-cylinder, 85 mm. \times 130 mm. Wheel-base, 11 ft. 6 ins.; track, 4 ft. 6 ins. Price, about £800.

14-16 h.p. eight-cylinder, 60 mm. \times 100 mm. Wheel-base, 10 ft. 6 ins.; track, 4 ft. 2 ins. Price, £600.

20-24 h.p. eight-cylinder, 70 mm. \times 120 mm. Wheel-base, 11 ft. 6 ins.; track, 4 ft. 6 ins. Price, £875.

Douglas.

10 h.p. two-cylinder horizontally opposed, 92.5 mm. \times 88 mm., water-cooled. Inclined valves. Electric lighting set and engine-starter. Detachable back cushions. Three forward speeds. Detachable wire wheels. Suspension by helical springs actuated by bell-crank levers.

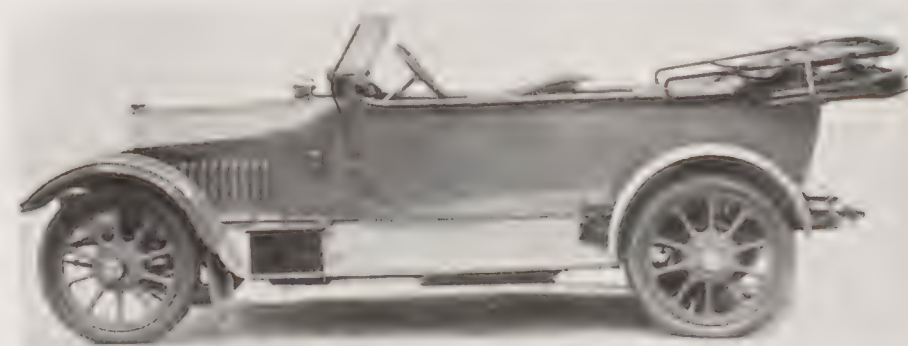
Enfield-Allday.

10 h.p. five-cylinder, 63 mm. \times 80 mm., arranged radially around a rotating crankshaft, air-cooled. Patent concentric valves and valve mechanism. Pistons of the slipper variety, made of aluminium bronze. Triangulated tubular frame of original design. Spiral bevel drive. Wheel-base, 8 ft. 6 ins.; track, 4 ft. Price (provisionally), £295.

15 h.p. six-cylinder, 73 mm. \times 115 mm., in six separate units. Pressed steel frame. Single disc clutch. Three forward speeds. Change-speed lever centrally mounted. Cantilever spring suspension, back and front. Dynamo lighting and electric engine-starter. Wheel-base, 10 ft. 6 ins.; track, 4 ft. 1½ ins. Price (provisionally), £495.

Fiat.

12-16 h.p. four-cylinder monobloc, 65 mm. \times 110 mm. De-



THE 14 H.P. HUMBER.

tachable heads. Aluminium crank-chamber. Camshaft and generator driven by silent chain. Multiple disc clutch. Engine-starter with button on dashboard. Both brakes on back wheels. Speedometer driven from gear-box. Wheel-base, 8 ft. 9 ins.; track, 4 ft. 2 ins.

H.F.G.

8.9 h.p. two-cylinder horizontally opposed engine, 85 mm. \times 110 mm., air-cooled. Aluminium pistons. Mechanical engine starter, operated by pedal. Transmission by two friction discs, with separate clutch. Final drive by bevel pinion



THE 11 H.P. HILLMAN.

No differential. Tubular frame. Cantilever springs. Automatic lubrication to pedal and change-speed shafts, spring brackets, torque rod joints, and rear brake fulcrums from two central positions near dashboard. Wheel-base, 8 ft. 10 ins. track, 4 ft.; tyres, 700 mm. \times 80 mm.

Hillman.

11 h.p. four-cylinder monobloc, 65 mm. \times 120 mm. Central change-speed control. Three forward speeds. Worm-driven rear axle. Both brakes operate on rear wheels. Engine started by Scott dynamotor. Wheel-base, 8 ft. 6 ins.; track, 4 ft. Detachable steel wheels, 700 mm. \times 85 mm. Prices,



Specially drawn by]

["The Motor-Owner,"

4.—THE 16 H.P. SUNBEAM, WITH LIMOUSINE BODY.

5.—THE 14 H.P. ANGUS-SANDERSON.

6.—THE 25 H.P. VAUXHALL, WITH INTERIOR DRIVE CABRIOLET BODY.

NEW MODELS FOR 1919.

open two-seater, £315; coupé, £378. The price of the four-seater model is not yet fixed.

Humber.

10 h.p. four-cylinder monobloc, 65 mm. × 120 mm. Smith 4-jet carburetter. Petrol tank in dashboard, with gravity feed. Thermo-syphon cooling. Dynamo lighting and engine-starter. Four forward speeds. Wheel-base, 8 ft. 3 ins.; track, 4 ft. 1½ ins.; tyres, 710 mm. × 90 mm. Price, £425.

14 h.p. four-cylinder monobloc, 75 mm. × 140 mm. Wheel-base, 9 ft. 5 ins.; track, 4 ft. 9 ins.; tyres, 815 mm. × 105 mm. Other details substantially the same as the 10 h.p. model. Price, £600.

Overland.

Four-cylinder monobloc, 85.7 mm. × 127 mm. (Model 90). Camshaft driven by helical gears. Lighting and engine-



THE 12 H.P. SWIFT.

starter as separate units. Thermo-syphon cooling. Central control. Both brakes on rear wheels. Cantilever rear springs. Vacuum petrol system. Wheel-base, 8 ft. 10 ins.; track, 4 ft. 8 ins.

Palladium.

Two-cylinder horizontally opposed, 89 mm. × 107 mm., air-cooled, with forced draught. Aluminium pistons, with scraper ring. Inlet pipe exhaust-jacketed. Transmission by friction discs. Rear axle solid, no differential. All brakes act on rear wheels. Wheel-base, 8 ft. 6 ins.; track, 4 ft. Price—two-seater, £175; four-seater, £195.



A 9.5 H.P. STANDARD COUPÉ.

Rover.

12 h.p. four-cylinder monobloc, 75 mm. × 130 mm. Detachable cylinder heads. Improved valve gear, and inlet parts, giving more power when pulling slowly on top speed than the pre-war model. Three forward speeds. Lucas engine-starter. Spring gaiters. Wheel-base, 9 ft. 8 ins.; track, 4 ft. 2 ins. Price, £700 complete.

Standard.

9.5 h.p. four-cylinder monobloc, 62 mm. × 110 mm. Electric lighting set and engine-starter. Petrol supply vacuum-fed from rear tank. Thermo-syphon cooling. Three forward speeds. Overhead worm drive to back axle. Wheel-base, 7 ft. 8½ ins.; track, 4 ft.

Star.

15 h.p. four-cylinder, cast in pairs, 80 mm. × 150 mm, and

20.1 h.p. four-cylinder, cast in pairs, 90 mm. × 150 mm. Zenith carburetter and Autovac petrol supply. Four forward speeds. Detachable steel wheels. Wheel-base, 10 ft. 3½ ins.; track, 4 ft. 9 ins. The larger model is identical with the 15.9 h.p. save as to the engine and the fitting of 820 mm. × 120 mm. tyres instead of 815 mm. × 105 mm. Prices—15.9 h.p., £385 chassis, and £506 5-seater torpedo; 20.1 h.p. £485 chassis, £606 5-seater torpedo.

Stellite.

9.45 h.p. four-cylinder, 62 mm. × 89 mm. Adjustable inlet valves. Thermo-syphon cooling. S. U. carburetter. Three forward speeds. Sankey detachable wheels. Both brakes operate on rear drums. Wheel-base, 8 ft. 3 ins.; track, 3 ft. 10 ins. Price, £285.

Sunbeam.

16 h.p. four-cylinder, 80 mm. × 150 mm. Claudel-Hobson carburetter. Four forward speeds. Petrol tank, 12 gallons. Half-elliptic springs, the rear ones underslung. Wheel track, 4 ft. 6 ins.; overall length, 15 ft. 5 ins. Four types of body.

24 h.p. six-cylinder, 80 mm. × 150 mm. Four forward speeds. Rear brakes pedal-operated; propeller shaft brake hand-operated. Wheel-base, 10 ft. 11½ ins. or 11 ft. 4½ ins. Track, 4 ft. 6 ins. Four types of body.

Swift.

12 h.p. four-cylinder, cast *en bloc*, 69 mm. × 130 mm. Inclined valves. Thermo-syphon cooling. Leather-faced cone clutch with flat steel springs under leather. Four forward speeds. Bevel type rear axle, mounted on double row ball-bearings. Accumulator accommodation inside frame underneath rear seat footboards and not on running boards. Wheel-base, 9 ft.; track, 4 ft.

Talbot.

12 h.p. four-cylinder, cast in pairs, 80 mm. × 120 mm.; 25 h.p. four-cylinder, 101.5 mm. × 140 mm. and 36 h.p. six-cylinder, 80 mm. × 130 mm. Engine redesigned. Springing altered. New back axle. New type of radiator. Stewart-Talbot carburetter, with extra air valve on steering wheel. Electric lighting and engine-starter. Wheel-base, 9 ft. 5 ins.; track, 4 ft. 4 ins. Prices—12 h.p. chassis, £610; 25 h.p. chassis, £850; 36-h.p. chassis, £900.

Vauxhall.

25 h.p. four-cylinder, 95 mm. × 140 mm. Four forward speeds. Spiral bevel drive. Ball-valve oilers instead of grease-cups. Spring drive between engine and gear-box. Large stub axles, heavy springs and separate torque tube. Electric lighting and engine-starter. Wheel-base, 10 ft. 10 ins.; track, 4 ft. 8 ins. Price—chassis, complete with Kington body, £1,125.

30-98 h.p. four-cylinder, 98 mm. × 150 mm. Wheel-base, 9 ft. 6 ins.; track, 4 ft. 6 ins. Price—chassis, £1,050.

Vulcan.

20-25 h.p. eight-cylinder, 70 mm. × 115 mm, two *en bloc* castings of four cylinders each. Valves on one side of each set of cylinders. Thermo-syphon cooling. Zenith carburetter. Autovac petrol supply. Electric starter. Four forward speeds. Wheel-base, 10 ft. 4 ins.; track, 4 ft. 8 ins. Standard colours, blue, green or grey. Chassis price, £545.

Waverley.

12 h.p. four-cylinder monobloc, 69.5 mm. × 120 mm. and 15 h.p. four-cylinder monobloc, 75 mm. × 120 mm. Electric lighting set and engine-starter. Three forward speeds. Prices—12 h.p., £406 5s.; 15 h.p., £443 15s.

Wolsley.

16-20 h.p. four-cylinder, 90 mm. × 121 mm. Electric starting and lighting. Multiple disc clutch running in oil. Four forward speeds. Cantilever springs to rear. Wheel-base, 11 ft. 1 in.; track, 4 ft. 5 ins.

24-30 h.p. six-cylinder, 90 mm. × 130 mm. Dual silencer. Wheel-base, 11 ft. 5 ins.; track, 4 ft. 7 ins.

30-40 h.p. six-cylinder, 102 mm. × 140 mm. Two ignition systems by magneto and induction coil. Wheel-base, 12 ft. 4 ins.; track, 4 ft. 7 ins.

WISLEY LAKE.

A Well-known Scene on the Portsmouth Road.

A FAMILIAR chord will be struck in the breast of every habitué of the Portsmouth Road by the illustration subjoined. It is reproduced from a natural colour photograph of the well-known Wisley Lake, opposite the Wisley Hotel, and

German band, induced the latter to allow themselves to be rowed off in a boat to an island in the lake, in order to entrance the ears of an apochryphal compatriot alleged to live on the other side. Lured on by the hope of a suitable reward, the band played vigorously for some



From a photo.]

WISLEY LAKE, ON THE PORTSMOUTH ROAD.

[in natural colours.]

the scene must have been gazed upon by tens of thousands of car-owners.

Time was, of course, when there was nothing here but a little inn, known as the Wisley Hut, but this was before the motoring era, though within the memory of old cyclists. The story still survives, in fact, of how a band of merry wheelmen, much plagued by a peripatetic

time before finding that they were not only hoaxed but marooned.

The present hotel is one of the Surrey Trust houses, and is one of the most popular of road-side resorts. On a fine Sunday afternoon the muster of cars is enormous, and as many as 3,000 teas are said to have been served during a Whitsuntide holiday.

HOW THE MOTOR-CAR HELPS THE AEROPLANE.

WELL it might have been imagined that nothing could have been more independent of the motor-car than an aeroplane, which is free to travel to almost illimitable heights in the upper empyrean. The facts, however, are otherwise, and in two respects the automobile renders invaluable



A BURFORD TRACTOR ALONGSIDE A CROSS-CHANNEL AEROPLANE.

service on various aerodromes, and will do so to an even greater extent as time goes on.

In the first place, there is the question of haulage. Big machines like the Handley Page and other bombers are none too easy to move about when not travelling under their own power; it may happen at times, moreover, that the machine has made a forced landing on a rough patch of ground, which makes the task of pushing harder still. The problem has been effectually solved, however, by the use of the Burford-Cleveland tractor, a small but very handy and powerful machine which has proved its value in this connection to such a degree that it is regarded as a necessary accompaniment to all aerodromes and seaplane stations where aeroplanes of the heavier types are employed.

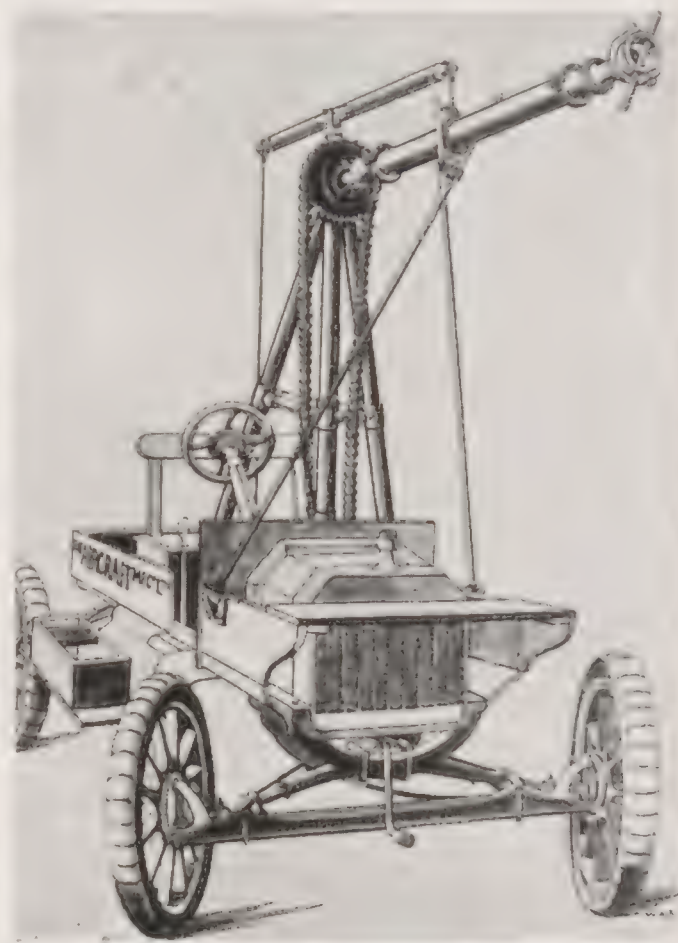
For sheer novelty, however, combined with great ingenuity and practicality, the method of starting an aeroplane engine by means of a motor-car is particularly interesting. It was invented by the late Captain B. C. Hucks, the chief testing pilot of the Aircraft Manufacturing Co. It was very effective, but since his lamented death has been further developed by the firm in question, with a view to a more widespread use of the device.

A general idea of its method of operation may be gathered from the accompanying illustration.

It will be seen that an ordinary chassis is used, surmounted by a special apparatus; but incidentally it should be mentioned that the frame of the former has been lengthened by 12 inches to allow the insertion of a couple of clutches, while a small platform, on which a man may stand, has been placed at the forefront of the car. Otherwise the chassis is unaltered.

The special mechanism consists of a long chain, which is adjustable, supported by a tripod, and drives, through bevelled gearing and a universal joint, a tubular arm to the outer end of which is fitted a

second universal joint. The latter is designed to engage with a clutch in the boss of the aeroplane propeller. In the centre of the tubular arm is an adjustable clamp, connected to two stays. This clamp is loosened



THE AIRCO ENGINE-STARTER.

while the operator is attaching the arm to the propeller, the weight of the arm being meanwhile borne by a hinged and swivelled rod with an elastic attachment to the chassis, but as soon as the tubular arm is adjusted to the height of the propeller boss the clamp is tightened up. This main arm, by the way, is telescopic, and all the operator has to do is to drive up to within about 9 inches of the propeller, extend the telescopic arm until it makes contact, and then adjust it to the right height, so that the cross-pin of the universal joint engages with the boss. Unless there is something wrong with the aircraft motor itself it starts as soon as the driver puts the car in gear.

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ADVENTURES IN THE ALPS.

By CHARLES L. FREESTON, F.R.G.S., Author of "The High-Roads of the Alps," "The Passes of the Pyrenees," etc.

THAT the Alpine high-roads are the finest in Europe, and that they offer illimitable opportunities of the most glorious form of motor touring under safer conditions, in the main, than the average English road, are facts which I have emphasized in various quarters for more than a decade. To write, therefore, of "adventures" in this connection may suggest an anti-climax, and in recalling some of the more moving episodes of my own experiences of mountain touring I may be suspected in advance of "giving the show away" in a spirit of confessional candour.

if he has nothing of a novel character to relate when in a reminiscent mood.

I will own to one "thrilling experience," however, and it was certainly a memorable one, inasmuch as it took the shape of a violent collision with another car! But though this occurred during the Alpine Trial of 1912, it was on a perfectly flat road at under 700 feet altitude, and might just as easily have happened—nay, much more easily, considering the ubiquity of our corners—on any English highway.

The scene of the accident was a bend in the valley road from Bozen to Trent, some nine

miles from the latter town. I was sitting in the back of the car at the time, writing busily,

and the first intimation of what was coming was an agonized shout from the driver of an Italian car swinging round the bend which we were just approaching. He threw up his hands and abandoned himself to his fate. The cars collided, practically head on, with a bang which seems to echo



"NEARLY UP!" A VIEW ON THE STELVIO PASS (9,041 ft.) WITH THE ORTLER IN THE BACKGROUND.



ON THE WAY TO THE COL DE LA CROIX DE FER. (The author took a large car up this narrow road, but was turned back by a landslide.)

Adventures, none the less, do not necessarily imply "hairbreadth escapes"; neither is it to be supposed that one may travel repeatedly over many thousand miles of Alpine roads, including more than a hundred passes, without encountering something out of the ordinary run. Even the touring motorist who has never been out of England must have had a very dull time

in my ears as I recall the accident. Our near-side front wheel caught the inside of that of the Italian car, and forced it and the axle right



ROUNDING A CORNER.

back, while the dumb iron of the other car ploughed its way half-way along our near-side running board, the two cars being absolutely locked together across the road.

Behind us were about sixty of the competitors in the Alpine

Trial, and they came rolling up thick and fast, but Prince Elias of Parma and others lent willing hands and soon edged the cars to the side of the road. We then managed to back ours out under power from its wedged position. Other than the split running board and a crumpled wing there was no visible damage, and we wondered to what extent the chassis might have been strained.



WINDINGS OF THE STELVIO ROAD.

A preliminary trial of 100 yards or so revealed nothing serious, so we took the crew of the Italian car on board and drove them into Trent, travelling, of course, in gingerly fashion

for fear of any unsuspected injury declaring itself.

Then followed a day and a half of wrangling with lawyers and overhauling our car—a 38 h.p. Daimler. It proved to be practically undamaged. Naturally, however, I was chafing at the delay, as the Alpine Trial was only half over and I wished to see it through. The programme included a day's rest at Trieste, which gave us a chance, by a forced march, of catching the cars up; but I say forced march advisedly, because the days' journeys arranged for the trial were very long—450 kilometres or



A VIEW AT TRAFOL, ON THE STELVIO PASS.

thereabouts—and included the crossing of many lofty passes. However, I planned out as short a cut as was possible, and decided to cross the very little known Della Mauria pass.

To do this we had first to ascend and descend in turn the Broccone, Gobera, Rolle, Pordoi, and Falzarego Passes, most of them being over 6,000 and one over 7,000 feet high. When part way down the Della Mauria I took a photograph, from which the coloured illustration opposite has been reproduced, of the road winding its way along the valley deep below. We passed the Italian customs outside Udine, and eventually descended the winding hill into Trieste at 10 o'clock at night, after which we had to wander round for over an hour before we could find vacant beds.

So much for my only accident in over 20 years of Continental touring. The next reminiscence which I may describe was noteworthy from the fact that, in a singularly effective manner, it exemplified the value of being an Englishman. Towards the end of June, 1914, after the conclusion of the Alpine Trial of that year, I was driving from Vienna to the Grand

Prix at Lyons. I decided to leave Austria by way of my old friend the Stelvio Pass, and crossed it for the fourth time under exceptionally beautiful conditions. The snowfall that year had been the heaviest within the memory of living man, with the result that the beautiful glaciers above Trafoi were more glistening than ever, while the wonderful road itself was outlined with an unusual degree of clarity, and thereby enabled one to secure better photographs than on any previous visit.

An unpleasant awakening, however, was in store after we had passed the Austrian customs at the summit (9,041 feet), for my companion, who had charge of the triptyques, discovered that he had lost the documents which should have passed us into Italy. Now this was distinctly awkward, as any Continental tourist can readily appreciate. If unprovided with a triptyque one has to pay duty in a sum which may be anything up to £100, and, what is more to the point, pay it in gold coin of the country which one is seeking to enter. The duty into Italy was 600 *lire*, or £24; but not only did I not carry any Italian gold, but I had only 50 *lire* in Italian paper and 400 odd *kronen* in Austrian notes.

Experience has shown me that the best way of travelling abroad is to use circular notes, with an advice from one's banker, and to present them in whatever country one may need to raise the wind; consequently I had merely provided myself with enough Italian money to

carry me from the frontier to Milan, where I proposed to change a circular note. When, therefore, I presented myself at the Italian custom house a couple of miles below the Stelvio summit, I was of course met with a *non possumus* on the part of the officials. Gold was the only passport.

It was indeed a nice quandary to be in! To

return to Austria was impossible, as we had given up our "final exit" triptyque, and something like £90 in Austrian gold would have been necessary before we could have re-entered the country; on the other hand, we were *plantés là*, over 8,000 ft. above the sea, with no means of getting either backwards or forwards. Milan was over one hundred miles away, and half the journey would have had to be taken by diligence, so that I should have had to leave the car at the custom house three nights if I had set out alone to fetch the money. In desperation I asked the chief of the *dogana* if he would put an officer on board the car and let me take him along to Bormio, eleven and a half miles down the pass,

to see if I could raise the money there, and this suggestion was accepted.

What earthly good it was going to do me, however, I did not know, for the simple reason that I wanted £24 worth of gold and had only £22 in paper; moreover, as it was Sunday afternoon I had no expectation of finding a bank open. Off we went, however, down the



Specially drawn by]

A BIRD'S-EYE VIEW OF THE DELLA MAURIA PASS.

["The Motor-Owner."]

pass, threading our way carefully through the five long winter galleries in the Diroccamento defile, all dark and slippery, and we eventually reached Bormio. I rushed off to the bank, but, as I expected, it was closed.

"I am not going to be done!" I ejaculated, and went off to the Hotel Poste and asked for the proprietor, one R. Clementi, and a right good fellow he proved to be.

"We are two Englishmen in a little difficulty," I said; "can you assist us?" He replied that he would gladly do whatever he could, and asked what the trouble was. I explained that we wanted 600 *lire* in gold, and he said that he would try to get it if I would give him the equivalent in English bank notes, but I was obliged to tell him that I had no English notes, and less than the required amount in any other currency. "Well," he said, "I will see what I can do," and went out, returning shortly to say that he could obtain no gold. Then he went to confer with the customs officer, and on returning said, "I have asked him to telephone to the *dogana* and enquire if they will accept your cheque this afternoon, on my personal guarantee that to-morrow I will liquidate it in gold."

This was distinctly hopeful, and my spirits rose accordingly. In a very short time Signor Clementi came up smiling and said that the chief of the *dogana* had accepted the conditions. We lost no time in the order of our going, but started off again up the pass. Truly it was the most enjoyable drive I ever had in my life, from every point of view. For one thing, we had been extricated from a serious difficulty, while the ascent itself was to the last degree exhilarating. The customs official was impassive enough for a time, but

when he saw the pace at which we were travelling he gradually grew enthusiastic and took out his watch. I turned round and asked, "*E buona vettura?*" and he rejoined, "*Si, si, signor,*" with an emphasis that left no room for doubt.

Before very long, however, we met a long cavalcade of cars and motor bicycles belonging to members of the Milan Automobile Club, who had come out to celebrate the opening of the Stelvio for the season, and we had to pass the whole lot in the neighbourhood of the five tunnels. After that came the hairpin corners, nearly thirty of them, but between the bends we once touched 70 kilometres an hour. The customs officer could hardly contain himself, and sat with his eyes glued on to his watch dangling at the

end of a chain.

As we neared the little plateau on which the *dogana* stands, we saw the whole staff eagerly watching our flight up the winding road, and when we pulled up the officer leapt off the car, shouting loudly, "*Trenta minuti! Trenta minuti!*" It was quite true; the Rolls-Royce had risen 4,134 feet and travelled 19 kilometres

in half an hour. The chief of the *dogana* was all smiles, took my cheque without a murmur, and gave me my papers in a few moments. After cordial farewells we descended the pass anew; but, although we could have reached Milan that night, it was obvious that the least

I could do was to stay at the Hotel Poste. We were comfortably housed, and the bill next morning was moderate.

If ever again I am within a hundred miles of Bormio I shall look up Signor Clementi; for



CLEARING AWAY AFTER A LANDSLIDE AT LEVICO.



A LANDSLIDE NEAR BRIANÇON.

consider what he did. He asked for no credentials, not even my name until I gave it him; other than the amount of his bill he did not even want any of the money I had with me, which would have represented the major portion of what he had to advance on the morrow; but simply because I was an Englishman he was willing to trust me to the extent of £24. Possibly I might flatter myself that I have an honest face, but I should be sorry to have to trust to that alone in any hotel or shop at home! A month later, when home in London, I called for my pass-book and there found the cheque, the back completely covered with the stamps of various banks of exchange through which it had had to pass before being cleared, and I have kept it ever since as one of the most interesting mementos of my touring experiences.

There was another occasion, by the way, on which I had to do the upper stages of a high pass three times over. This was on the Tonale Pass (6,181 feet), and the interruption to the programme was due to the fact that I was arrested as a spy. The Tonale is rather less picturesque than the majority of Alpine roads, but at one point, about 5,000 feet up, there is a particularly fine view of the Presanella peaks and glaciers, seen to great advantage from the road itself, as I knew from a previous visit nine years earlier.

When nearing the altitude named, therefore, I had my camera ready, and stopped the car

when the gleaming mass of snow and ice burst into view. After taking two exposures I got going again, rounded a corner, and lo! there was a fort just above the roadside. "By Jove!" I said to my companion, "I had forgotten all about the Strino fort; I hope no one saw us." Nothing happened at the moment, however, and we completed the remaining three miles of

ascent to the summit, where there is an Austrian custom house, the Italian *dogana* being much lower down on the other side.

It was soon clear, however, that we were in for trouble, as the chief of the custom house would not look at our papers, but kept on asking questions about a camera; as a matter of fact, he had been telephoned to from the fort to stop us and send us back. My camera was handed to a soldier, and I was requested to take him and it down the pass again to the fort. We had not gone more than half a mile before two infantrymen, with fixed bayonets, called on us to halt and clambered on the car; as it had only a two-seater body, they had to stand behind, like a couple of Lord Mayor's footmen.

We trickled down

the very twisty road until, just opposite the fort, our way was barred by a squad of nine or ten soldiers, with their bayonets all presented at the front tyres.

The spectacle must have been comical to the last degree, and very heartily I wished that I could have stood by the roadside and "snapshotted" the scene. However, we were very



Specially drawn by

["The Motor-Owner,"

THE FINAL WINDINGS OF THE STELVIO PASS.

courteously received by the officer in command of the fort. It appeared later that he had been definitely informed by a sentry that I had actually photographed the fort, whereas it was not even in sight when I used the camera, and, moreover, would in any case have been at my back. The officer, however, said that he was obliged to request me to develop my negatives on the spot, and took my companion and myself into a pitch-dark room lined all round with Czech soldiers. Now, the camera contained a film of twelve exposures, and I explained that I had used ten many miles away, leaving the last two for the Presanella, and the officer was decent enough to take my word for this and allow me to cut off and deal with the last two exposures only.

Film development with a squad of soldiers all round was somewhat quaint work, but when the job was done and the negatives were inspected it was amply evident that I had had no insidious designs upon the fort, or been animated by any other desire than that of securing permanent records of attractive scenery. The officer brought out refreshments, apologised for the inconvenience we had been caused, and eventually we romped gaily up the pass again. On the whole, I did not regret the incident, for it was entertaining, even though it caused me to end the day's journey at an earlier point than I had intended. I wonder, by the way, whether the little Strino fort is still in existence; in all probability, I should imagine, it has vanished, as there was heavy fighting on the Tonale between the Italian and Austrian forces in 1915.

Turning to another aspect of motor mountaineering, I may say that I have been singularly free from mechanical troubles, and have certainly had far less to do in the way of attention to the car, on numerous Alpine journeys, than has characterised ordinary journeys up and down Great Britain. Punctures, I may add, are very rare on the passes, as the surfaces are mostly splendid, and there are very few nails or other puncturing instruments such as one picks up on more traffic-laden roads.

Are there any disturbing factors, however, it may be asked, which specially apply to Alpine touring as distinct from ordinary road work? The only one I can think of is the possibility of landslides. These happen occasionally on the lower slopes of the passes; where avalanches are likely to occur on the higher slopes the roads are generally protected by substantial galleries. My first acquaintance with a landslide was on

the Arlberg Pass in 1909, while half-way up to the summit. The driver of a descending car informed me that it was no use going any further as the road was blocked, but when I asked where, and his reply was "Just above Landeck," I decided to continue. On reaching St. Anton, where the Arlberg tunnel begins, I put the car on a goods train to Landeck, stayed the night in the village, and went on by express next morning.

In subsequent Alpine tours I never encountered another landslide until 1914, when a curious one occurred at Levico, at a low altitude, through the bursting of a dam. It had happened not very long before I had arrived upon the scene, and I photographed the workmen clearing up the *débris*. At first sight it looked as if I should have to go back and make an enormous detour, but fortunately there was an orchard near by through which a narrow path had been made. With some danger to one's eyes and much scratching of paintwork, it proved possible to wriggle the car through. In the same year a friend of mine had his journey interrupted by a landslide near Briançon, of which he kindly gave me a photograph. In this case he had to turn back and reascend the Col du Lautaret, instead of going over Mont Genève.

The only alteration of plan which I myself have ever experienced was in the French Alps, in July of the same year. I had climbed the Col du Lautaret and the Col du Galibier (8,399 feet), and after joining up with the Mont Ceniz Pass, had turned back up the little known Col de la Croix de Fer, intending to continue over the Col du Glandon and rejoin the Lautaret road near Grenoble. The ascent of the Col de la Croix de Fer was the most adventurous of any I have ever experienced in the Alps, as the road was entirely unfenced, frequently skirting deep ravines, and on the upper stages was barely wide enough for the car, as may readily be gathered from a glance at the illustration on the first page of this article. At the summit there was a little inn, and here I learned, to my chagrin, that the Col du Glandon road, owing to a landslide, was impassable at the foot; consequently there was nothing for it but to go the whole way back to the junction of the Mont Ceniz road. As our electric lamps had given out, we had to put our best foot forward in order to reach Grenoble before dark, but the Mont Ceniz road is the widest in the Alps, and we finished a long day with a particularly good performance.



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IS IT A WOMAN'S JOB?

CHRISTOBEL NICHOLSON.

BEFORE the war, a woman who drove a car, or rode a motor-cycle, was regarded with a certain amount of suspicion. She *must* be strong-minded, and was therefore certainly a freak, and probably

an suffragette into a bargain. Men regarded her as a sport," but as a usurper, and suspected her of being entirely lacking in the domestic virtues. In fact, she was of considerable danger of losing her sex; for though mankind in general retained its chivalrous instincts, men trouble themselves less, it was more a matter of curiosity and a bit than the way for a beautiful damsel in distress such as inspired the knights of old. Every halt on the road, whether of rough design or of master, a crowd collected. Men, women and small boys gaped with open mouths, and only shut them in order to make one irritating remark.

Mrs. Grundy did not at all approve. She placed the rapidity of the driver on a par with the speed of her vehicle; besides, mounting a motor-cycle was a highly unladylike performance. Convention was not, however, the only difficulty with which the woman driver or rider of that

day had to contend. Her main obstacle was her total ignorance of mechanism in any shape or form. To the average woman, the motor engine was x , the unknown quantity. She was not naturally mechanically minded, and as for

that, she is not now. She could be taught to drive, but nobody thought it necessary or possible to explain to her the inner workings of the beast.

Quite apart from this drawback, the cars themselves were more uncertain, and more difficult to manage, in those days. Self-starters were in their infancy, and were looked upon as costly ornaments which *might* work when the engine was hot. None of the latter-day gadgets for easy starting were invented, and the terrors of an hour or so's cranking in the morning were quite enough to choke off most would-be chauffeurs. The hardships so greatly outweighed the joys of motoring

that the woman owner-driver was a novelty. The majority gave it up, and contented themselves with an occasional turn at the wheel, under the severe criticism of a chauffeur

Then war broke out, and we who had driven before thought we saw a chance to be useful.



Photo. by]

MISS CHRISTOBEL NICHOLSON.

["The Motor-Owner"]

We offered our services to the British Army, but we had not proved our worth. We were untried, and our own countrymen smiled cynically, turned us down, and left it to the Belgians to experiment with us. Before long, however, in the inevitable shortage of men, it became necessary not only to employ the already seasoned women drivers but to train recruits as well. Schools for instruction in driving and repairs sprang up by the dozen, and girls passed out by the hundred, thinking themselves totally efficient, only to find that they were to receive further careful tuition at the hands of the Army.

When I came home from France to take up work in England, I replaced a sergeant who took a most fatherly interest in my well-being and well-doing. He set me "extensive and peculiar" examinations in the topography of London, the nature of the traffic in different localities, the roads to be avoided and the routes to take, and a thousand other small details. Finally, it was considered safe to allow me out alone. I took over the car, and was driving away on my first job, when he hurled the following remark at me as I disappeared:

"Now remember, Miss, you, being the fastest thing on the road, are entitled to the middle of it."

Rather a dubious compliment perhaps, but he was kind of heart, and meant well, I know.

Very gradually, and rather unwillingly at first, public opinion on the subject of women drivers changed as the war went on, and the women drivers altered too. They began to realize their capabilities and their responsibilities, and many who had regarded the idea as impossible before the war will now take unto themselves a car. Their experience will stand them in good stead. They will have learnt that that car is best tended, and runs best, that is handled by one person. They will have gained faith in themselves, and will decide to become owner-drivers. From that point onwards their training and experience will tell. They will know exactly what they want. The colour of the body and the texture of the upholstery will no longer be the deciding factors, for women know an engine when they see it now. They will want to test it on the road, on hills, and in traffic. They know the joys of a self-starter; they know how to nurse it so that it will self-start; and hours of labour have taught them that wire wheels are the invention of the devil so far as cleaning is concerned.

The old hands will be all right, but others

will feel the lure as well, and they may be rather led away by the apparent ease with which the job has already been tackled by the war-worn Amazons. To them I would give a word of advice:

Experience is by far the best, although the hardest, school; but experience is likely to prove a costly way of learning, unless it is backed up by sufficient mechanical knowledge. Pounds can be saved at the cost of a few lessons in mechanism and electricity in a really good garage. They will teach not only the diagnosis of complaints and the possibilities of home repairs, but will also enable the pupil to inspect a car with a critical eye after it has been in the fitter's hands. The average fitter has a considerable tendency to camouflage, which may dazzle the uninitiated, but reveals itself as obvious surface work to the experienced. Once these lessons are learned, there is no reason at all why a woman should not prove herself quite as capable as a man of running a car.

While it is true that women's powers are limited by their natural lack of mechanical instinct, it must be remembered that the average man owner-driver is limited to the same extent by lack of the tools and appliances necessary for complicated and heavy repairs. How many private garages can boast a pit or a crane? Very few. So far as the bigger jobs are concerned, therefore, a man has to leave them to the workshop hand, and the smaller running repairs which require no great physical strength can be quite easily and equally well done by a woman. Grinding in valves is a simple matter, for instance, and affords excellent opportunities for a lesson in patient philosophy; for valves will not be hurried. Anybody who has any idea at all what makes a car run can adjust a carburetter. The book of the words supplied with the car will explain minutely how the brakes can be taken up and the clutch-stop made to perform its duty. The magneto is usually the main stumbling-block. There is something hopelessly elusive about electricity; but a working knowledge of it can and should be gained.

Now for a heart to heart talk with you, the future owner-driver, on a few minor—but necessary points:

Greasing and oiling, except in the case of the clutch (which may need more liberal treatment) should be governed by arithmetic. Make up your mind—not how far the car will run without greasing, but how far she likes to run, for cars differ in this respect. Add up your mileage,

or let your speedometer do it for you; and when you have reached the prescribed total, fill all grease-caps. After so many more miles, inspect your gear-box and back axle, and add the necessary amount of gear-oil to keep it at the correct level. In this way you avoid all possibility of running the car till she squeaks.

If brass or nickel work abounds, and causes you much heartburning in wet weather, rub it over with a vaselined rag after cleaning. Only, don't extend your energies to the door-handle, or you will not be popular with your passengers. Leather the car down directly you bring her in after a rainy journey, if possible, because rain-drops spoil the paint, if allowed to dry on. When you are sponging or leathering a car, always rub the way of the paint, and you will then find that scratches will not show as obviously as if you had rubbed it any other way.

Use the hose with a lavish hand; it makes cleaning easier. But, unless it is a very hot day, and you enjoy a shower-bath, don't stand immediately opposite that part of the body that you are hosing. Stand at the end of the

car, and let the water play right along the side, or across the back, and you will keep moderately dry.

Women will take motoring for granted, and be taken for granted. The public are by this time used to it. The days of amused and jeering crowds are over, and, although the small boy is inevitable, he will only "do it to annoy," and "because he knows it teases."

The woman driver has learned a great deal; but she has taught a great deal too. She has shown the world that although she can soil her hands, if need be, she can still sew a fine seam. She can hose a car in gum-boots and an overall, but that does not prevent her from appearing in satin slippers and a Paris creation in the evening. The "eternal feminine" will probably show in her methods of work, but that is no reason why it should make the work inferior.

The woman owner-driver has come to her own. She will hold her position, and she need no longer fear the horror of being dubbed a sexless mass of dirty incompetence.

ON THE LAKE OF COMO.



This charming picture shows a characteristic view of Cernobbio, on the Lake of Como. The large building on the foreshore is the Villa d'Este—once a Royal Palace, now one of the most pleasantly situated hotels in Europe.

WHAT CAR-OWNERS DID FOR THE WAR.

NOT a thousandth part of the voluntary work performed at home during the war has ever been recorded, partly because there were countless willing workers who did not wish to advertise themselves, and partly because the Press generally, owing to the paper shortage, was circumscribed in space to an unprecedented degree. It is only fitting, however, at this particular juncture that we should make some reference to certain directions in which the car-owners of this country have rendered invaluable service, as their work has come or is coming to an end.

What could be finer, for example, than the way in which the transport of the wounded from the London railway termini has been performed by the London Ambulance Column? This body consisted entirely of amateur owners, and it is a fact that they took charge of, and

of cars which was provided from this quarter for conversion into ambulances may be gathered from the accompanying illustration of the original Baltic Fleet, which was afterwards augmented.

What the Royal Automobile Club did alone would fill a volume. Its members all over the country rendered yeoman service in respect of meeting hospital trains and giving rides to wounded soldiers in tens of thousands. Above all it organised a War Service of cars and owner-drivers no less than 5,000 strong. They were available for regular duty at every camp in the country where required, and also worked for the Ministry of Munitions and other Government departments. In all they covered 37 million miles of road, and the capital value of the cars, which was thus saved to the country, was over £2,000,000.



THE ORIGINAL GROUP OF CARS PROVIDED BY THE BALTIC UNIT OF THE LONDON AMBULANCE COLUMN.

conveyed to a hospital, every wounded man who arrived in London between August 28th, 1914, and February 15th of the present year. They met 5,041 trains, carried over 660,000 patients, and travelled about 4,250,000 miles. In all they maintained in regular service some 150 vehicles, of which 80 were fitted up as ambulances, and the remainder were used for the conveyance of bearers and sitting-up cases.

The work was both arduous and constant, as trains had to be met at all hours of the day and night. Some of the honorary officials concerned actually gave up their houses, in addition to providing cars of the very highest class, and lived over the mews at which the ambulances were kept, while all the others were never out of reach of the telephone either by day or night. The Column, it may be added, was formed from various units, particularly noteworthy among which was the Baltic, of which Mr. Philip Runciman was the moving spirit. The type

Another body, the Volunteer Motor Mobilisation Corps, started giving rides to wounded soldiers in November, 1914, and kept up the good work throughout the war, as effectively as unostentatiously, and never asked the public for a penny.

Among other bodies which deserve honourable mention is the Hospital Motor Squadron of the London Volunteer Rifles. Its members are all private motorists who pay their own expenses and supply the cars. Over 100,000 wounded soldiers have been given open-air rides into the country by this squadron, generally to some club where entertainment could be provided. The withdrawal of the petrol supply at one time threatened to put a stop to these benevolent efforts, but thanks to the organising ability of the Commandant, Mr. A. J. Wilson, these outings secured the sanction of the Red Cross Society and the Petrol Control Department, and the work was continued.



A GOOD trade-mark will suggest at a glance some attractive thought about the goods it sponsors—their qualities or uses.

That is why the Stonehenge Trilithon was chosen as the trade-mark of Avon Tyres—primarily because the manufacturers' ideal could be best expressed by a symbol denoting *strength and endurance*, the outstanding qualities of Avon Tyres.

Secondly, there is the important matter of origin. Stonehenge is essentially British in origin and interest, and "British for Britons" is no mere sentimental slogan in these days. It voices a law of national preservation, and no British motorist will be satisfied with any other than real home products such as those of the Avon Company—rubber manufacturers at Melksham in Wiltshire since 1885. Fit Avons and get

—the comfort of resilience
—the safety of strength
—the economy of endurance

AVON
TYRES

19, NEWMAN STREET, OXFORD STREET, W.1.
Works ... MELKSHAM and BRADFORD-ON-AVON, WILTS.

FIG LEAVES.

By H. DENNIS BRADLEY.

AFTER the first sunny days in the Garden of Eden, when the beautiful and un-English climate necessitated the donning of a fig leaf merely as a concession to the dawning of modesty, it is safe to assume that primitive man adopted clothes as a protection against the elements. So long as his peculiar garments kept him warm, and gave his arms free play to slay the interfering ichthyosaurus and the too inquisitive mastodon, which were ravishing his larder out of sheer exuberance of spirits, he would not seem to have spent many sleepless hours of the night in evolving a new thing in two-toed sloth skins. His clothes were for business purposes only, and life was pretty strenuous; so, as far as he was concerned, he scorned the waste of a dinner-hour in thinking out new styles; he was out for business, with his club—business neither pure nor particularly simple. And despite the assumed culture of this twentieth century it is a moot point whether in manners, mackintoshes or morals civilisation has advanced much since the days of the cave-dweller. And for an astonishingly long period from age to age, from century to century—it has crystallised into a sort of tradition—the idea persisted that the man in pursuit of his meat ration, his bread and margarine and his sugar, need only to adopt a shapeless, supposedly utilitarian and inevitably ugly form of covering for his nakedness.

Since the era of fig leaves and woad there have, of course, been happy lapses from that code of ugliness and utilitarianism, and at different periods man has realised that though money-making and life may at times be sordid businesses at the best, there is no occasion to dress sordidly. When fig leaves became bad form and clothes were accepted as a part of the scheme of life—things to live in and live with—the more truculent or virile spirits attempted to control their surroundings. The soldier proceeded to clothe himself in scarlet and gold, the courtier invested himself in gay silks and satins and stuck a feather in his hat; even a poor writing-man had his sartorial conscience, and a Goldsmith prided himself on the colour of his coat.



"THE ORIGINAL JAZZ"

But the tradition persisted, in spite of brilliant rebellions: the Albertian age gave it a *cachet* which seemed likely to render it immortal.

Then war came, and, as an aftermath, revolutions of ideas and ruthless criticism of traditions.

If clothes are necessary—and the fashions of the *revue* ladies occasionally suggest a doubt—let us see that men's clothes are not needlessly and traditionally ugly.

The prices charged by Pope & Bradley are high, but the Government at one time controlled the issue of wool. When the Government controls anything the ordinary business man finds it difficult to control his temper. But probably in primeval wars indifferent fig leaves were rationed at an exorbitant figure; at any rate, we know Adam's apple cost a hell of a price. Lounge Suits from £9 9s. Dinner Suits from £12 12s. Overcoats from £10 10s

THE ESTABLISHMENT ONLY
14 OLD BOND STREET, W. 1
11-13 SOUTHAMPTON ROW, E.C. 4

HISTORIC SITES.

Some Reminiscences of the Eastern Front.

THE three accompanying illustrations, which are taken from an English tourist's collection of snapshots, are historically interesting from the fact that they represent scenes of note in the Austro-Italian campaign. When Italy declared war her

they themselves afterwards declared, they put up no resistance in order that the village itself should not be irretrievably damaged by the effects of shell fire.



THE VILLAGE OF CORTINA.

THE AUSTRO-ITALIAN FRONTIER BELOW CORTINA. troops forthwith entered Austrian territory wherever possible, and the first frontier line which they actually crossed was the one shown in the illustration herewith.

On the right is seen the Austrian custom-house on the Ampezzo road, some five miles below Cortina. The Italians pushed forward and took possession of Cortina without any opposition being offered. It has never yet been stated



A CHARACTERISTIC VIEW OF THE ISONZO VALLEY.

Cortina, of course, as a charming health resort, has had many English visitors, but probably very few of them have ever viewed the scene shown in the third picture. This represents a spot in the Isonzo valley, not far from Caporetto. The road on which the car is seen

at rest leads down from the Predil Pass to Gorizia and Trieste, and was the centre of many sanguinary conflicts between the Austrians and Italians, with varying results, over a very long period. The Isonzo river, which gives its name to the valley,

closely adjoins the road almost throughout its entire length.

whether the Austrians were unprepared for the rapidity of the Italian rush, or whether, as

IS CAR DESIGN ALL WRONG?

By Capt. W. G. ASTON, A.M.I.A.E., A.F.R.Ae.S.

ONE of the favourite indoor sports of the contemplative philosopher is to speculate upon how different all things would be if some things had been otherwise than as they are. These gentlemen will gravely inform you that if only water had a low specific heat instead of a high one, life on this poor old earth would have been impossible. There would, of course, have been a complete lack of contemplative philosophers, but as we should never have existed, and, if we had, should not have known anything about it, it is difficult to see that any of us would have been much the worse.

To dream about impossibilities is a fatuous waste of time, and such things, though ephemerally interesting to the mental acrobat, are impossibilities, because they deal with natural causes and effects and a system of evolution which is under the evident jurisdiction of an infallible authority. But it is by no means idle to speculate concerning such evolution as has been carried on under human guidance, inasmuch as that which is human must inevitably be fallible. It may not, therefore, be altogether unprofitable to descend from the realms which comprehend solar systems and the origin of energy, and come down to the base level of the common or garage motor-car.

Is present-day motor-car design all right, or is it all wrong? Is it the only kind of design that could be produced, or is "fashion" the sole reason for its existing standardisation (so far as that goes)? These are questions that repay looking into, but I am not at the moment prepared to insist that they yield a definite answer.

By way of a premise we may assume that a motor-car has four wheels, demands accommodation for, say, four persons, is limited to certain dimensions, and requires an engine and transmission system to furnish its motive power. It is now our business to examine whether the necessary components are arranged to their best advantage in the standard motor-car of to-day.

Since the function of the car is the transport of human beings who demand and deserve comfort (the world is quite miserable enough as it is!) the first consideration is accommodation. In the standard type the driver and his neighbour

sit in the middle of the vehicle's length, and the rear passengers occupy a position immediately over the back axle. This is obviously both illogical and wrong, because the point of maximum comfort is just above the centre of the wheel-base, and it is clearly absurd to place the owner of the car and his wife, as very frequently happens, in such a situation that they receive the worst of the road shocks.

On the other hand it is clearly desirable that the driver should sit in front in order to have an uninterrupted view, and hence the alteration of merely changing the seating round cannot be considered. Such being the case, motor-car designers, accepting the standard type of chassis as more or less unalterable, have been driven into adopting a very long wheel-base in order to provide reasonable accommodation and comfort for all *personnel*. This, however, is bad because it involves extra weight and extra expense, as well as seriously impairing "manœuvrability."

But the difficulties and disadvantages attached to this solution of the problem are unavoidable so long as the mere convenience of mechanism is held to be of more importance than the comfort of the passengers. So long, in fact, as the engine is placed under a bonnet in front the most advantageous arrangement for personal comfort cannot be obtained, as it is quite clear that for this purpose the passengers should be grouped fairly close together, more or less at the centre of the car, and that all their seats should be within the wheel-base. To satisfy these desiderata by merely lengthening the wheel-base is clumsy and unscientific.

It becomes immediately apparent that if we are to have what we want the engine must be dislodged from its present position; and it is therefore necessary, in the interests of a logical argument, to enquire why it was ever put there at all, and why it should not be put somewhere else.

Engines in motor-cars were not always under bonnets, but they adopted this habit for two principal reasons. Firstly, because they were in the earlier days so grossly and (as it now seems to one) so inexplicably unreliable that "get-at-ability" was of the first importance. Secondly, because the big bonnet was a strong feature of the German Mercédès car, which, by

reason of its manifest and manifold excellence (at the time, that is to say) justly inaugurated a fashion.

Motor manufacturers have always been like a flock of sheep; they will blindly follow any individual with sufficient intelligence and enterprise to open up a gap in the hedge on his own account. Hence they all started putting their engines under bonnets in front, entirely oblivious of the fact that this was not by any means the feature which "made" the Mercedes (as a



FIG. 1.

matter of interest it may be pointed out that the then Mercedes engine had, by virtue of its greater reliability, less need to be put under a bonnet than most of its contemporaries), and the fact that the German car attained its reputation through sounder design, sounder material and sounder workmanship than its rivals had hitherto incorporated in their cars.

But for all that the engine went under the bonnet in the front of the chassis, and there it has stayed to this day. There is no need for it to be there; it is a nuisance to body accommodation so long as it is there. The question now arises, are there any other reasons against its

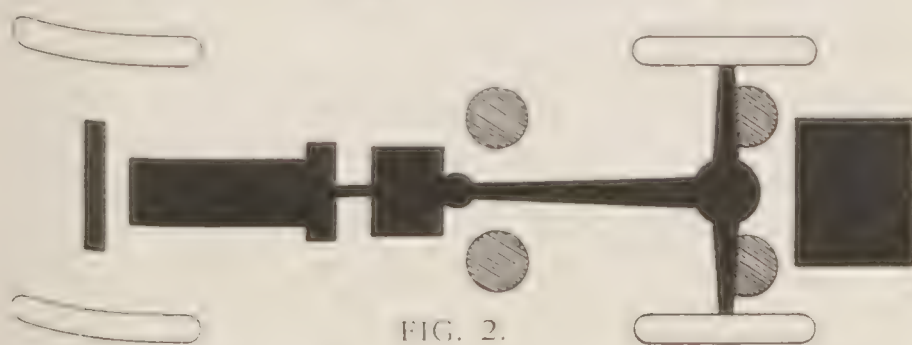


FIG. 2.

remaining where it is? The answer is unmistakably that there are several.

Chief amongst them is the bad weight-distribution which the bonneted engine in front involves. The weight of a car varies considerably according to the number of passengers seated in it, or, in a commercial vehicle, to the load of goods it has on board. Now, on first principles, it is very clear that for all-round purposes, such as steadiness round corners, traction, and comfort generally, the weight of the car should be distributed in a definite and determinate manner; that is to say, a certain

proportion should be carried on the front wheels and a certain proportion on the rear. Hence the passengers or goods should, for this purpose, be arranged symmetrically around the centre of gravity of the empty car, so that with varying loads the proportions between the weights on the front and rear axles will be preserved as nearly as possible intact.

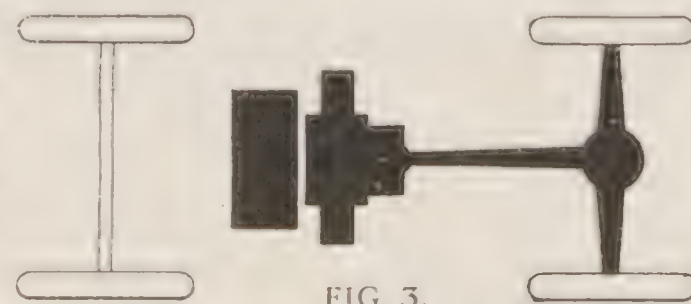


FIG. 3.

This is not done in the "standard" car of to-day, and it is therefore not surprising to find that four-seaters show themselves to be uncomfortable, not to say skittish, when carrying the driver only. It is, moreover, rather too much to expect rear springs to operate equally well under loads which may easily vary, in an open five-seated car, by as much as 100 per cent. In order to get the best suspension it is consequently desirable to have all the principal weights of the vehicle, *e.g.*, engine, passengers, gear-box, petrol tank and so forth, massed as closely as possible around the centre of the chassis.

It is also desirable from another point of view. Fig. 1 diagrammatically exhibits the distribution of the

sprung weight (the unsprung will be considered later) in the average

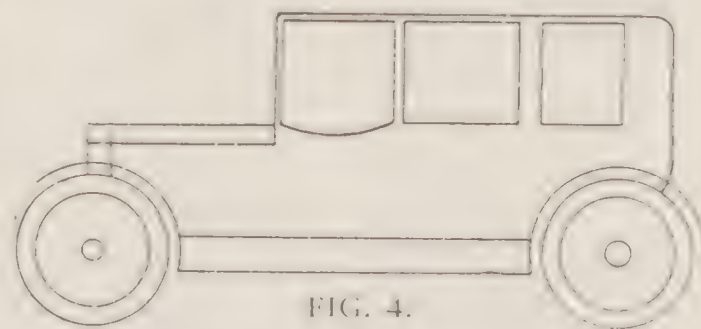


FIG. 4.

car of to-day. If the body is an ordinary limousine, with a certain amount of "overhang," the conditions are so much the worse. When the car passes over bumps in the road it oscillates in the manner of a see-saw. To prevent the persistence of such oscillations it is necessary that the see-saw should be relatively short, and that the weights at each end should be relatively small; that is to say, most of the weights should be in the middle so that, in technical terms, the "moment of inertia" is not great.

These conditions are not fulfilled in "standard" car design, and hence springing is not by any means so good as it might be. An aggravation of this ill result is found in the fact that nearly all makers, for reasons of their own, certainly not for reasons based upon a scientific foundation, think it easier to spring a heavy

vehicle than a light one, and hence they utterly neglect the weight economy which, in the interests of increasing efficiency, ought to be the very first thing they should strive to gain.

Of course, it is really no more difficult to spring a light vehicle satisfactorily than a heavy one, but it certainly is more difficult to spring one in which the weight distribution is hopelessly bad. In most cases I believe that attempts to take a sensible amount of weight off a chassis have resulted in an even worse distribution than usual, since the engine remains in front, and is the part which is generally least susceptible to weight reduction.

But it is not only in a vertical plane of oscillation that the moment of inertia of a car makes its influence felt. The vehicle has to go round corners, and the more the weights are spread out at each end of the car the greater is the tendency to skid (or what is the only alternative, to wear out tyres). Looked at from above, in Fig. 2, the diagrammatic chassis shows a wrong distribution of weight for stability in manœuvring, and the case is only made the worse because in this connection the unsprung weight (it is by no means negligible) of the front and back axles has to be taken into consideration. If, as is shown in the illustration, the back axle and gear-box are incorporated into one unit, the conditions simply get worse instead of better. Huge rear petrol tanks and well-packed luggage grids extending right behind the axle are excellent things from the tyre merchants' point of view ! But from no one else's.

The important effect which the disposition of weight has upon stability is illustrated by the fact that in many cases racing cars have been made with sliding engines, adapted to be permanently bolted down when the best position had been found by actual experiment on the road. This position is invariably much further back than that which is occupied by the engine of an ordinary touring car.

By a parity of reasoning it is therefore clear that, from the mere fact of this engine remaining obstinately in front of the car, the wear and tear on tyres is greater than it need be, and that by a better distribution of weights a higher economy of running expense might be materialised.

Here, then, are no fewer than five serious disadvantages which are inseparable from keeping the engine where it is : (i) Less personal comfort ; (ii) less ease of suspension, and irregular suspension ; (iii) greater tendency to "pitch" on bad road surfaces ; (iv) greater tendency to skid round corners ; and (v) heavier wear on tyres.

Against them the sole advantage that can be

cited in favour of the bonnet system is that the motor is more accessible. This is a lamentable confession of incompetence on the part of any designer who quotes it, and of lack of confidence in the goods he turns out on the part of any managing director who supports him. A modern engine is reliable. It would be even more so if it were not so easy to get at.

For every time that it is attended to for some adequate reason it is three times messed about with, fiddled about with, tinkered about with, for no reason whatever except that some idiot must dirty his fingers by refusing to leave well alone. Any self-respecting motor-car manufacturer ought to be able to send his cars out with the bonnet under lock and key, and then lose the key for six months. "Of course," he objects, "you have to lift the bonnet to tickle the carburetter." Of course you have to do nothing of the kind. You can tickle the carburetter by means of a Bowden wire trigger if you must tickle it. But a good carburetter ought not, in the year of our Lord 1919, to want such kittenish treatment.

I understand that until the L.G.O.C. people put their magnetos under a sort of aluminium dog-kennel with a hefty lock on it (key kept at the works !) they suffered from extensive ignition troubles, because all the drivers, knowing nothing whatever about magnetos, assumed that that long-suffering mechanism was invariably the source of trouble, and consequently mis-adjusted them, if nothing worse, on a wholesale scale. I am confident the same system might be very well applied to engines, even as it is, indeed, applied automatically to back axles, which are no more reliable than engines, but are protected from the inquisitive screw-driver simply by being out of the way, abominably dirty and disgustingly uninteresting to mechanism wreckers.

Added to the reasons why the engine should be somewhere nearer the middle of a car is a very good reason why it should no longer be put under a bonnet.

All motor-cars have not had bonneted engines. The original Lanchester had a central engine, and retained this feature until it had, in this respect, a class all to itself. Now it has been brought into line with "standard" cars, but that fact is no argument against the central engine. It simply proves that fashion and convention (for it is nothing else) are stronger even than logical engineering practice. A diagrammatic side view of the old Lanchester is given in Fig. 3 so that it can be compared with Fig. 1. Its superiority is at once manifest.

Mention must also be made of that admirable little two-seater, the G.W.K., which still, very wisely, retains its central engine and excellent weight distribution. The old Riley 9 h.p. runabout was, of its period, equally good.

One of the principal objections generally raised against placing a water-cooled motor anywhere but in the



FIG. 5.

front of the car is the difficulty (which surely cannot be very serious) of connecting it up to the radiator which forms the conventional front portion of the bonnet. This point is easily dealt with. *Imprimis*, the engine, thanks to the experience and knowledge which has been gained in aircraft work, need not be water-cooled at all. In the second place, even if it must be water-cooled, the front of the bonnet is the worst place possible for the radiator, for the cooling ought to be carried out by the forcible induction of air, and not by an adventitious draught that depends solely upon the wind and the car's road speed.

Another objection (it is just as well fairly to review all sides of the question) is that an engine takes up a lot of room and

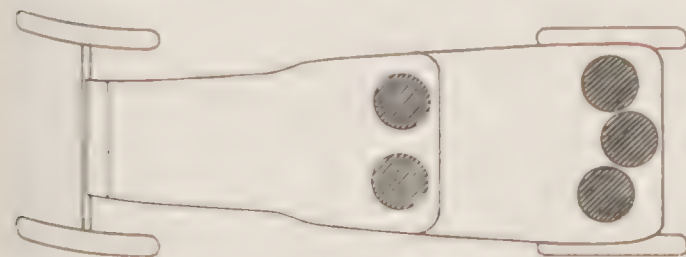


FIG. 6.

would seriously interfere with passenger accommodation if it were placed centrally in the chassis. This is a point that was of importance several years ago, but, except in unusually high-powered vehicles, I cannot see that it can be made to-day. By means of such high efficiencies as can easily be obtained—and what is more, maintained—at the present time, great power can be got from very small dimensions, and it should be the object of designers to reduce these dimensions (by the use of higher grade materials) further and further still. A great deal could be done in this direction even with the "standard" types of water-cooled motor, but when the air-cooled stationary radial comes into fashion, as come it most certainly will, even this objection will completely disappear.

But we will now, if you please, consider a phase of the subject which, so far as my memory

serves me, has not been dealt with before. It refers to the shape of the complete vehicle in point of its air-resistance. In this respect motor-cars, excepting only racing designs, are pretty well as bad as they can possibly be, and are all outraging the fundamental principle that a body which is intended to travel through air should have a blunt nose and a sharp tail; in short, that it should sensibly approximate to streamline form.

Sporadic attempts have been made to produce

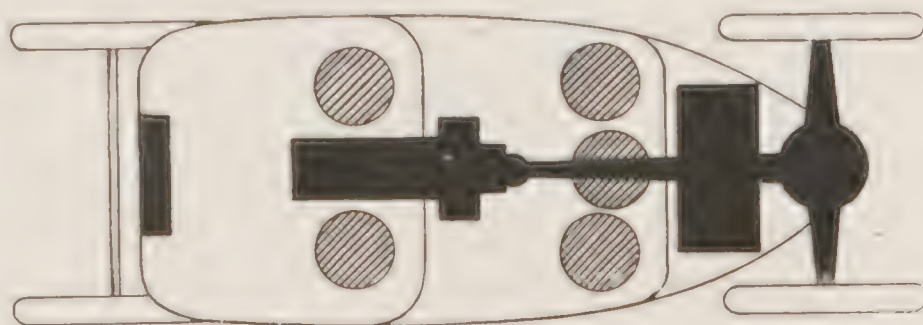


FIG. 7.

streamline cars; but, so long as the engine is under a bonnet in front and four passengers have got to be accommodated somewhere aft of it, no adequate success seems possible of accomplishment. Fig. 4 shows a side view and Fig. 5 a plan view of the ordinary enclosed body. The nose is partially blunt it is true, but oh! the lack of sharpness in the tail—and it is tail sharpness which is infinitely the more important consideration in streamline flow. To obtain this it is necessary both to squeeze up the rear passengers, or reduce their number to one, and



FIG. 8.

restrict their head-room to ridiculously small proportions; or, alternatively, a monstrous tail-piece must overhang the back axle, in which case it would be an indescribable nuisance, because the car would not go in any ordinary garage.

Take, again, as shown in Fig. 6, the generally accepted five-seater open touring car. Could anything be worse? Here you have an approximately streamline body actually made to travel in the direction reverse to that which it should. Now, I candidly admit that at very moderate speeds wind resistance is of no very great consequence, but at the speeds which most of us drive at it is *not* a negligible quantity, and at

high speeds (what are motor-cars for if not for high speeds?) it is a very important thing indeed. Why dissipate anything up to twenty-five (or more) horse-power into the atmosphere, when with proper design you could reduce this wastage of energy to a mere fraction of the amount?

This can be done comparatively easily if the engine be placed centrally. You can then have, as indicated in Figs. 7 and 8, a reasonably streamlined body form with no undue over-all length, and no cramping of the passengers. And, of course, the same thing applies to a covered body. It need hardly be said that this sort of vehicle—other things, such as shape of the undershield, etc., remaining the same—

must raise very much less dust than one of the ordinary design. Dusty roads are undeniably an anachronism, but I am inclined to believe that it is easier to solve the problem of making motor-cars less inclined to raise the dust than to prevent or cure the formation of the dust itself. At all events, for the purposes of the argument we must consider *some* things as remaining what they are. It is best in these exercises of contemplative philosophy to deal with one variant at a time, and in this I have merely attempted to discuss what might happen if motor-car designers (or perhaps I should say producers) had greater skill, sharper enterprise and less conventionality.

PETROL FROM THE KERB.

TO the touring motorist there is nothing more vexatious in the way of ordinary routine, as apart from fortuitous happenings, than the filling of his petrol tank at a roadside garage. The process is as wasteful as it is sloppy; nothing

more inconvenient, particularly in the case of a gravity feed tank in the front of the car, could well have been designed.

None the less there is an easy remedy for a disability under which motorists have too long laboured. But for the war, in fact, we should probably have seen ere now a considerable development of the

owner himself it would effect economies in both time and labour.

The kerb apparatus is as simple as it is effective. A cylinder within a box, as shown in the illustration, is filled from a main storage tank within the building. When a car pulls up alongside the pavement, the flexible pipe which is seen resting on the floor is simply attached to the tank, and the petrol is then fed to the latter by vacuum pressure and pump. Unless the driver has demanded more petrol than his tank will hold, there is no slopping or waste, and when the flexible pipe is removed and replaced in the box, any surplus petrol in the pipe returns to the main storage tank. A very large gauge is fixed at the front of the cylinder, and the customer can see at a glance that he has been supplied with the amount of petrol which he has demanded.

From an examination of the apparatus and storage system at the works of the makers—The Steel Barrel Co., Ltd., Phoenix Wharf, Uxbridge—we can unhesitatingly say that the whole system has been very carefully designed, and appears quite free from all possibility of error in any respect, and there is no reform which we should more gladly welcome than the wholesale adoption of the kerb distribution system.

It must be admitted that the London County Council has objected to pavement fixtures of this kind, but in less crowded places than London it is unlikely that any opposition will be raised by local authorities. The only conjecture which may be hazarded, as an unwelcome possibility, is that the Postmaster-General might put up a factitious claim to a monopoly of the kerbstone for his red pillar-boxes!



THE KERB APPARATUS.

kerb petrol distribution system, which offers innumerable advantages without any accompanying drawback. Now that touring is being resumed it is to be hoped that private car-owners will ask every garage proprietor whom they encounter in the course of their journeys why he does not instal a storage tank and pavement distributor. The widespread adoption of the system would be an undoubted boon to every motorist, while to the garage-

THE GOLFING MOTORIST.

By R. ENDERSBY HOWARD.

INFINITE is the variety of golf. Go the player whither he will, he finds always something new and interesting in a strange course; a setting which is fresh to him, and shots which he has not been called upon pre-

supreme convenience. I know a man who, when he devotes a day to the happy adventure of playing amid strange surroundings, makes a point of visiting at least two courses. In his time he has managed three: Stoke Poges, Porter's Park (Radlett) and Highgate—a round completed on each between breakfast and dinner. That must be nearly a record. But if one has no desire thus to hustle, one may envy him in the magnificent diversity which he finds in his leisure hours.

One great advantage which the golfing motor-owner enjoys is that he can proceed easily and quickly to the courses which are off the beaten track. And some of the finest greens of all are many miles from railway stations—glorious stretches of turf and sand dunes that remained un-

explored and unhonoured for centuries until they were discovered by golfing enthusiasts, and put to the only use for which they can have been intended by a beneficent Nature.

Take, for instance, Brancaster, in Norfolk,

viously to accomplish. There is no other game which offers this charm in anything like the same degree. It constitutes a very considerable proportion of the lure of the links.

Naturally, then, the golfer becomes a creature of peregrinating habits so far as circumstances will permit him to be one. He has his home course as his stand-by. In some respects it is the best course of all; every tree, every bush, every feature of the landscape is a familiar friend which indicates to him whether he has hit his ball farther or less far than usual and the strength of shot that will be necessary to carry him to his goal. But often the spirit of enterprise rules him; he wants to test his skill where it has not been tried in the past. It would be odd if he lacked this desire. To come to grips with the problems of a course hitherto unknown save by name is one of the splendid engrossments of the pastime.

Obviously it is accessible in far more bounteous reasons to the person who owns a motor-car than to the individual who is without that

and Huntercombe, in Oxfordshire. Never do you come into contact with the madding multitude at either of these places; at the busiest times, such as week-ends and holidays, there are players just sufficient to lend to the scene



THE 13th GREEN AT HUNTERCOMBE.



THE 6th GREEN AT SANDWICH, AS SEEN FROM THE FAMOUS "MAIDEN."

animation and the environment of sociableness without a touch of overcrowding.

Nor is that matter for surprise, as Huntercombe is six miles from the nearest railway station, Henley-on-Thames. Brancaster has no train communication closer than Hunstanton, $7\frac{1}{2}$ miles distant. They are two first-class courses standing in splendid remoteness, with tranquil old-world villages as their only near neighbours.

As tests of golf, they have claims to be regarded among the first in the country, and,



"TRAPPED!" THE "SOUP BOWL" AT RYE.

thanks in some measure to their isolation, they have come untouched through the war. No part of them has been needed even for farming.

Huntercombe was the creation of that famous Musselburgh professional, Willie Park, Jun. In making it all that he wished it to be he found the financial drain so heavy that he had ultimately to abandon the idea of remaining its proprietor, and sold it to a syndicate, which built a handsome club-house in lieu of the old farmhouse which once did duty. The club is now on a sound basis. The annual subscription, by the way, is shortly to be raised from five to eight guineas, and visitors will be called upon to pay increased green fees after six visits in any one year.

The fine old down turf at Huntercombe is in beautiful condition, and the whins and deep grassy hollows that make such excellent natural hazards are looking their best. The sandy sub-soil is carrying on its great task of draining off the rains and enabling the player to pursue his round dry-shod after the heaviest downpour; the expansive putting greens—and there are no putting greens bigger than those at Huntercombe—are picturesque.

In places the whins, left in something akin

to peace for four years, have flourished in such splendour as to encroach on the fairway and render the course narrower; but that is a happy dispensation rather than a bother to the committee, since it settles a problem which had been under consideration previously—the question of placing a higher premium on straightness by increasing the difficulties on the flanks.

In the days of the gutta-percha ball Brancaster had the finest two-shot holes in the country, or perhaps one should say that it had more beautiful holes of that type than any other links. The modern ball has affected the lengths, but there are still seven or eight holes at which the second shot, after a satisfactory drive, is as interesting a proposition as the golfer could wish to confront him.

It is a wonderful spot for a week-end or a longer holiday. The air is the bracing air that vitalises the jaded mind and weary body; the surroundings breathe the influence of perfect peace. Luckily, considering that it is an east coast course, no part of the land was needed by the military. There was the inevitable shortage of labour for upkeep, but the few workers performed their task well, and the golfer can visit Brancaster now with the assurance of finding it little, if any, worse than he knew it in 1914.

Some of the famous courses in the south-east of England have suffered; others have escaped. Deal, where the open championship should have been held this year, had to give up six holes for the purpose of a firing range, and is not likely to recover its old glories until next season. In the meantime it may be remodelled. Another championship course, Sandwich, had to accommodate big guns, barbed wire, and trenches in the scheme of national defence, and sundry Gotha bombs—one of which destroyed a teeing ground—in the procedure of enemy attack. The more important part of the links, the fairways and putting greens, were on the whole lucky, and when Mr. Ryder Richardson got a staff to work early in the year, on the process of restoration, they soon had the course pretty much as it used to be, and there has been a lot of play on it this spring.

Rye, that fine natural links in Sussex, is hardly one whit the worse for the long interregnum. These are courses made for the motor-owner; glorious expanses of real golfing country, which he can reach in two hours from town. Major H. D. Gillies, having a day's leave from his hospital at Sidcup, and a car, motored to Rye for the Easter meeting, won the scratch medal with a score of 78, and was back in hospital for his duties in the evening.

TOURING IN FRANCE.

How Soon will it be Feasible?

FOR nearly five years the joys of continental touring have been a *chose barrée* to British motorists, and the deprivation has not been, by any means, the least grievous of wartime necessities. Now, of course, with the armistice long since signed and final peace in prospect,

access thereto may only be possible by road. Nevertheless, it must, with reluctance, be pointed out that the obstacles in the way of



IN SEDAN MARKET-PLACE.

they are eager to get back for a time to the great highways of France, and even farther afield to the Alps or Italy.

There are other reasons, too, which are of weight at the present moment, apart from the broad question of general touring. One potent factor with many people will be the desire to see the chief battlefields of the Great War, while there will be many bereaved parents, alas! who will go to seek the graves of fallen sons, and



SHELL-BATTERED ARRAS.

realising these aspirations are numerous and varied, and it may be said at once that they seem unlikely to be removed in their entirety until the final peace has been secured. So far the position has been improved in only three respects. Petrol can now be bought freely in France without special permits, though the

supply until recently was somewhat short, and in small places there might be none at all. The restriction against sending cars out (of England has been abolished, as also has the necessity for obtaining permission from the French authorities as to taking a car in or out of France.

These withdrawals indicate



ST. QUENTIN AND ITS RENAISSANCE TOWN HALL.

a stage in the progress towards ultimate freedom of travel, but there are still many difficulties to be overcome. A Foreign Office passport is the first requisite to crossing to France, and then one must obtain a permit from the Military Permit Office, 19, Bedford Square, W.C., but no such document is likely to be granted for touring purposes alone. The next obstacle to be faced is the rigid surveillance of all permits at Southampton before access can be obtained to any ship.

Arrived at Havre—the Southampton-Havre route being the only one open to civilians—the British war zone is entered, and a further permit has to be obtained from the British Military authorities before proceeding any farther; otherwise the occupants of the car are liable to arrest. If duly provided with a permit, however, the road to Rouen may be followed, but there the Prefect of the Department must be approached for a permit for *sauv conduit*, which will allow the car to be driven to any part of France. Neither at Havre nor Rouen, however, is a permit issued save for considerations of national interest, and private touring is out of the question.

When peace is determined, however, the war zone will automatically disappear, and it is expected that there will be something like an approach to the old system of free touring.

Then comes the question of what to see. It should be pointed out at once that the war zone itself will have practically no interest except that which attaches to the long-sustained struggle and its visible effects. North-eastern France is flat and unpicturesque, save in the Ardennes corner, and the same remark applies to Belgium, but for a few towns like Bruges, Louvain, etc. The roads, moreover, in Belgium are mostly paved.

Except in the case of a journey through Normandy and Brittany on the north-west, the most northerly part of France that the tourist had hitherto been likely to see, unless he had occasion to visit Arras for a driving licence in the old days, or to pass through it if on the way to or from Luxembourg, has been the road through Amiens, Montdidier, Soissons, and Reims, the great highway to Dijon and Geneva. The road to Luxembourg, it may be remarked, is not wholly devoid of interest, as it passes through Sedan, of memorable associations, and St. Quentin, where there is a town hall in the Renaissance style which is the handsomest of its type in Northern France; none the less, the region is not one which

tourists have been in the habit of exploring from choice, but only if bound for the Moselle Valley. As for the route to Reims, it must be pointed out that the fighting zone was always north of this route until 1918, when the Germans captured Montdidier for a time, and penetrated a little way south of Soissons. With these exceptions the battle zone has not encroached on touring routes at all. The glories of French touring are to be found well away from the line in question, which of itself is only a means to an end—namely, the reaching of the French Alps in the Grenoble region. Normandy and Brittany, and the always interesting district around Tours, are considerably to the west, while the happy hunting ground of the Pyrenees is on the border line of France and Spain.

As for the war zone itself, it is a matter for the individual car-owner to decide as to whether he will enjoy the contemplation of devastated areas or not. The Touring Club de France, however, is anticipating a huge influx of American visitors, if not of British also, and will probably erect a number of temporary hotels, of the barracks type, at suitable points. As for the roads, their condition will, in the main, be found better than might have been regarded as probable. The British armies alone have laid down millions of tons of metal in renewals, to ensure the efficiency of their transport, and, though, of course, bumpy sections may be looked for here and there, it may be postulated that locomotion, generally speaking, will be practicable.

We may add, by the way, that since writing the foregoing we have received the following letter from a correspondent who has recently returned from an official tour in the battle zone, and is therefore in a position to speak with definiteness as to the condition of the roads:

“You need not hesitate to recommend motorists to visit the battle zone. The roads are quite excellent, far better than behind the lines, at bases, for throughout the front the roads have been kept paved, and are as smooth and hard as one could wish. Here and there, far out amongst the trenches, there are short stretches which are bumpy, but the state of the roads is the very last thing which should deter motorists, and I have quite recently—not ten days ago—motored over them for many hundreds of kilometres. The real difficulty is accommodation. Even now, before a single tourist has been allowed over, every hotel and inn within 100 miles of the front is packed.”

WHAT IS THE A.A. DOING?

By a Member.

The motorist, expectant of the revived freedom of the road, is now busily considering his programme. Has he ever heard of the A.A.? He has. Does he know what it represents and what it does for its members? I doubt it, for the simple reason that it does so much that unless one sits down deliberately to unfold its scheme much of its usefulness and activity is likely to remain undiscovered.

The General Headquarters of the organisation are at Fanum House, Whitcomb Street, London, W. 1, where all the administrative departments are located. Here the Executive Committee, under the chairmanship of Mr. W. Joynson-Hicks, M.P., meet regularly to review and direct the work of the Association. The chief officials meet in council under the Secretary, Major Stenson Cooke, at least once a week, to discuss programmes, policies, and progress. From the Secretary downwards, no member of the staff is too busy or too preoccupied to meet or assist an enquiring member. Every enquirer is impressed with the fact that his trouble is *the* all-important one of the moment.

No caller is disappointed.

In the General Reception Room his business is ascertained and he is put in touch with the Department handling it; every step is taken to satisfy him without delay. If it is not possible to do so at once, his 'phone number or address is taken, and information is forwarded immediately it is received or ascertained. The whole atmosphere of the establishment is one of responsiveness and action, undeniably businesslike, palpably efficient.

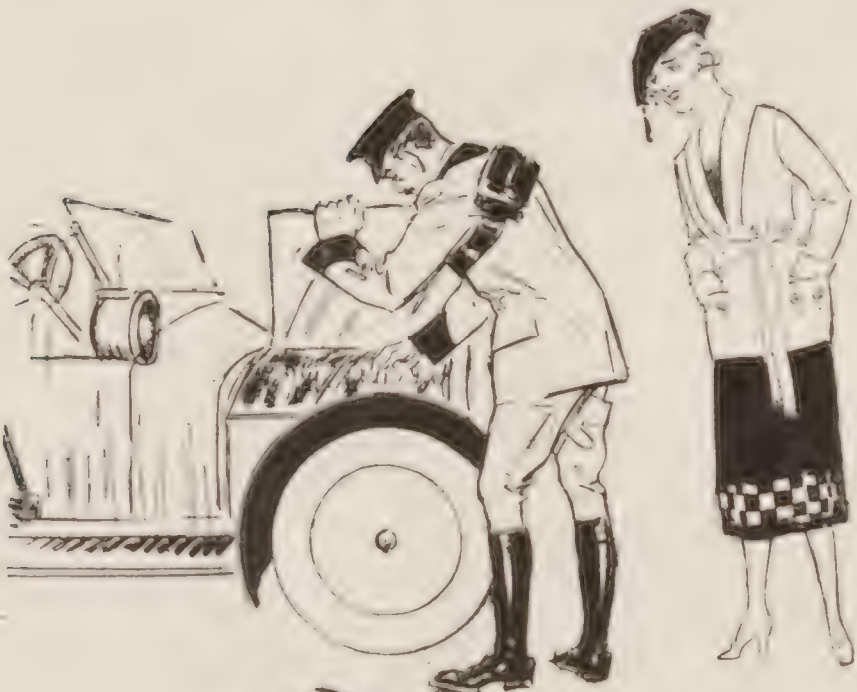
In addition to being the Clearing House for the Membership business of the London District, G.H.Q. is the nerve centre of the A.A. organisation. Linked up to it—each run on the same lines, actuated by the same *esprit de corps* and handled with the same efficiency—are seven District Headquarters covering the entire Kingdom, and comprising offices at

Manchester.	Swansea.	Edinburgh.
Leeds.	Birmingham.	Newhaven Harbour.
Liverpool.	Norwich.	Brighton.
Carlisle.	Cambridge.	Portsmouth.
Exeter.	Dublin.	Oxford.
Plymouth.	Belfast.	Paris and
Bristol.	Cork.	Nice.
Cardiff.	Glasgow.	

At each of these offices the member, whether he be a district resident or a visitor, has the same assistance from the staff as is rendered at G.H.Q., London.

Let us suppose that you who read this have just bought a motor car and, of course, want to drive it home. No wise man drives a car uninsured. As a potential member you apply to the A.A. Headquarters in your district, and there, immediately, obtain a covering insurance to the full value of





your car, thus saving the time and trouble involved in taking out a form new member, receive your membership card. You now have

the Key of the Road

in your pocket-book, and a universal passport on your car in the badge of mishap driving home, you will find the A.A. ready to help you. If necessary, you will obtain assistance. Suppose you are in trouble. The A.A. again comes to the rescue. The police are called in for its member terms of which complaints are investigated and adjudicated upon by the Committee who decide on the merits of the case. The amount of the average once out of a special fund lodged by the Motor Insurance Company.

Or suppose you have "trouble" with your car. The A.A. engineers give you practical advice to adjust the trouble amicably with the other side. In the, however, measures being required, the

Legal Department

The legal aid extended to members by the A.A. alone is worth far subscription which secures it. Free legal advice is given on all matters connected with the members' motoring activities, and Free Legal aid is accorded in under D.O.R.A. In these latter cases a solicitor is a specialist in motoring law, and he acts in every way as though you were his private client—except that he you reflect how easy it is to offend against police law, and how vanishes in defending oneself against a police court charge. The wisdom of securing a badge will be evident.

That protection is exercised in all directions and is typified in the khaki-clad C.

guide, philosopher and friend

of members. Generally a Comrade of the Great War, he is encyclopaedic in his local knowledge. He will render first aid to man and machine in case of accident, or advise where the nearest garage, or telegraph office, or doctor, or hotel can be found. If you are stranded for assistance, he will bring either in person, or by means of the telephone, the help with which his If you wish to have a hot or cold meal at your next stopping place, he will order it, or a the night, or a box at the theatre.

Should you have dropped a rug, or a lamp or a tyre on the road, he becomes an emergency circumstance all along your trail and, in all probability,

the lost article will be found

at the A.A. Headquarters in the course of a day or so.

Should there be a certain liveliness ahead in the matter of a report, he advises you. As he salutes you he notes the number of your car in his diary. Should your car for a joy-ride by some unauthorised person, application to the A.A. for information gets being traced by means of these patrol reports. Before the war, the A.A. was

a battalion of A.A. men

at work all over the Kingdom, and so soon as the men become available, that number will every one an ex-soldier or ex-sailor of the King.

Suppose you are planning to have a motor holiday, or would make a motor car, the A.A. once more is your standby. The Home Touring Department, with a complete itinerary, accompanied by full information concerning your journey, including road conditions. If you have been

overcharged by a hotel or garage keeper,

on report to that effect the Road Department will investigate, and if the will secure a re-adjustment, failing which other action will be taken.

Or say you have in your mind a continental holiday, or would make a motor car, the A.A. once more is your standby. The Foreign Touring Department, with a complete itinerary, accompanied by full information concerning your journey, including road conditions. If you have been

will frank you the

any copy of the Continent. You will be frank you the trip, for the countries you plan to visit. The A.A. through the necessity for in respect of the customs dues levied on your cash—a motor tourist large amount of your cash—at every stop on your way across the continent. The Foreign Touring Department will have your berth on your selected route. When the time comes for embarkation, your car at the port, and put aboard the there, a supply of petrol provided up and away from the quays after a portion of your triptyc and That is

and trouble involved in taking out a formal insurance policy, and, if a membership card. You now have

the Key to the Road

universal passport on your car in the badge of the A.A. If you meet with find the A.A. road patrol a friend in need by whose aid, if such be chance. Suppose your claim under your car insurance is disputed! The policy is secured for its members is a special one, under the re investigated. The amount of the award is paid you by them at merits of the case. The Insurance Company for that purpose.

able with your cycle, due possibly to faulty workmanship. Every effort is made to give you practical help. In the, happily rare, event of sterner

Legal Department

members by the. None is worth far more than the membership Free legal advice is given on all matters concerning or connected with es, and Free Legal advice is accorded in police prosecutions or those er cases a solicitor—a specialist in motor law is instructed, who u were his private client—except that he charges you no fee. When offend against police law, and how quickly a five pound note ce court charge.

ctions and is typical of the khaki-clad Cyclist Patrol who is the aide, philosopher and friend.

Great War, he is so adædic in his local knowledge. He can be of accident. He will tell you where the nearest railway station, or can be found. He will tell you where you can be stranded for fuel, or for mechanical y means of the. He will tell you with which his sentry-box is equipped. next stopping place. He will order it, or a hot bath, or a room for

ump or a tyre. He becomes an enquiry agent, reports the probability,

the lost article will be up y or so.

in the matter of report, he advises you of your responsibilities. ur car in his day. Should your car be stolen or taken out application to the A.A. for information generally will result in it

Before the war. The attalion of A.A. road patrol.

he men become available, that number will be again at work, and ing.

to have a motor holiday, or would make a business journey by is your stand-by. The Home Touring Department will furnish you mpanied by full information concerning matters germane to the tions. If you could let us know that you have been

overcharged by your garage keeper,

oad Department will investigate, and if the overcharge be evident ling which other will be taken.

mind a continent. The Foreign Touring Department will furnish you be simply indisputable. The Foreign Touring Department will revised Foreign Touring Handbook, with which the tourist can make his lirection without any conflict with the various national the standard. When the actual journey begins, a passport is provided for. When the actual journey Travel Pass which

will frank you through

on the Continent. You will be furnished with trip. The countries you propose to visit, and by merely presenting the A.A. through your bankers, you will be relieved of the necessity for depositing actual cash in respect of the customs dues levied on cars going abroad. In the ordinary way, a motor tourist would have to deposit large amounts of cash—at every frontier. By paying the amount of your fare across channel, and the freightage on your car, you will have your berth booked and your car shipped on the selected route. When you drive down to the embarkation, your car will be taken over by the A.A. agent and put aboard the steamer. On arrival at the port, it will be unloaded by the A.A. Agent there, and a supply of petrol provided to enable you to fill up and get away from the quay-side without any delay and after a portion of your triptyque has been examined. That is



Motoring is a movement subject to oppression and injustice for political reasons, and as such oppression finds expression in special taxation and legislation, it is necessary to meet it by political activity and propaganda. For that purpose the A.A. has joined with the Society of Motor Manufacturers and Traders, each body guaranteeing a large sum per annum during the next three years to provide a fund necessary to fight the motorists' cause in the Parliamentary arena. Its first endeavours are being directed towards the removal of the war super-tax of sixpence per gallon on petrol, and also to ensure the development of adequate supplies of cheap motor fuel, including British Benzole and Alcohol. It has secured a large supply of 50-gallon steel storage drums which are hired at a nominal fee of ten shillings per year. If the local road agent or garage keeper cannot provide the Benzole, a postcard to the Fuel Department, Fanum House, will quickly effect a solution. The A.A. does not waste time in talk or correspondence, it "gets things done."

A Parliamentary Road Transport Committee has been formed under the chairmanship of Mr. W. Joynson-Hicks. Although motoring influence in Parliament has been talked of for fifteen years, its opposition to the Transport Bill is the first real action ever accomplished there in the defence of motoring interests, and it has been effected mainly on the initiative of the A.A. The A.A. has paid, and is paying,

close and earnest attention to the Fuel Problem. It instituted a £1000 prize for the best method of adapting ordinary coal gas as a fuel for motor cars, and the competing apparatuses are now being judged. It possesses large financial resources which it will spend for the benefit of its members in particular, and British motorism in general. The A.A. never has hoarded but aims at spending its revenue as collected for the benefit of the members



who provide it. That policy holds and will be maintained. The A.A. has erected

thousands of Direction Signs

on a plan which informs the traveller, not only of the nearest village or town and its distance, but also the starting and terminal points of the highway. This work, interrupted by the war, will now be continued until every village and hamlet in the Kingdom is included.

There are thousands more of A.A. Special Warning Signs erected at dangerous points of the roads of the Kingdom. Should an A.A. member consider that any road point requires the safeguard of a warning sign, or improvement, on giving particulars to Headquarters a qualified official is dispatched to inspect and report. If found dangerous, a sign is erected by the A.A. or other necessary action taken.

The Road Scheme of the A.A.

includes the appointment and classification of Hotels. This classification, made on a five star basis fully explained in the A.A. Handbook, is constantly being revised from information supplied by members and officials. It also includes the appointment of Road Agents—motor engineers and garage keepers—in order to provide members with assistance of a satisfactory skilled character and to prevent overcharging. A.A. Special Signs, many of which are illuminated by night, are conspicuously posted on the Hotel and Road Agents' premises.

All these varied activities are maintained at high efficiency, because the entire staff of the A.A. is highly efficient and its administrative system allows of no slacking. No matter is too trivial, no trouble too great where the member's needs are concerned. It exists for his service, and for the protection and advancement of the automobile movement.



HOW TO JOIN !!

AA&MU



Form of Application for Membership.

To the Automobile Association & Motor Union.
(Incorporated in the Automobile Association, Ltd.)

FANUM HOUSE,
WHITCOMBE STREET,
COVENTRY STREET,
LONDON, W.C.1.

To avoid all possibility of mistake in description, it is suggested that the applicant's existing card be attached to this form.

Members are hereby required to be enrolled in the Association & Motor Union.



I, the undersigned, being in sympathy with the objects of the A.A. & M.U., hereby request to be enrolled as a member of the A.A. & M.U. subject to the Rules and Regulations of that Body.

Please send me the (White) Badge of the A.A. & M.U. which I undertake not to lend, sell or submit to any person, and to return at once my Membership card.

1. My Subscription for the ensuing twelve months is ...

2. Fee for the use of Membership card ...

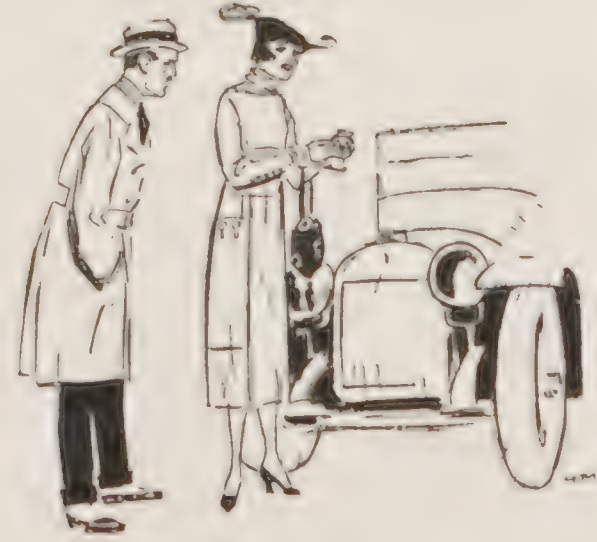
Category	Amount	Category	Amount
Annual Subscription for Car	£2 2 0	Badge	5/-
Light Car	£1 10 0	Motor Cycle	4/-
Cycle Car	10 6	Motor Cycle	3/-
Motor Cyclist	10 6	Motor Cyclist	8/-

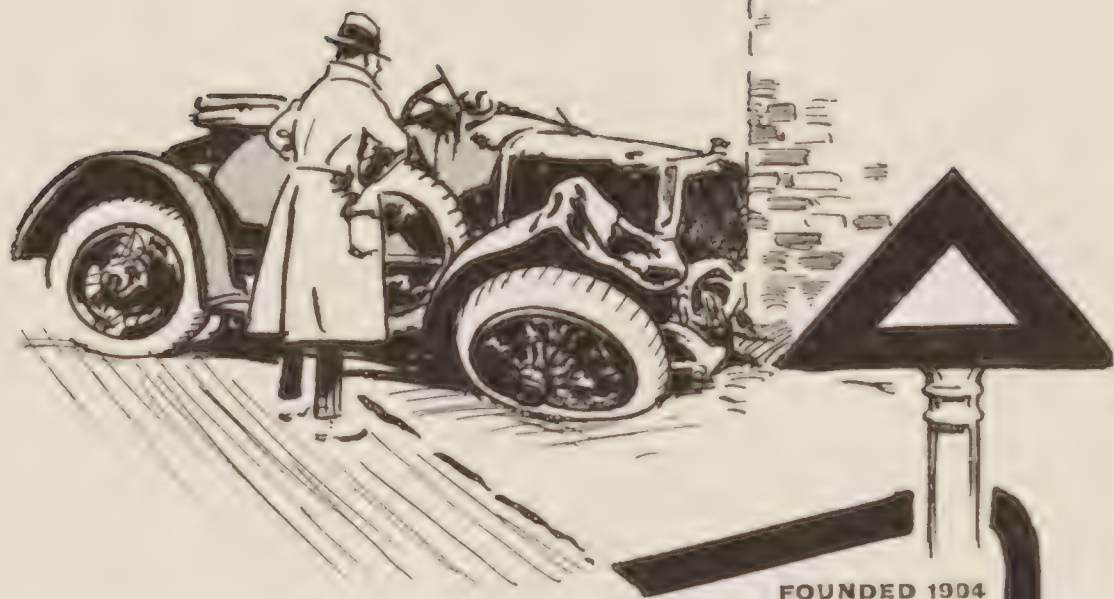
It is understood and agreed that no property or interest in the said Badge, other than that of the right to use same during Membership, shall vest in or pass to me, THAT THEY SHALL ONLY BE DISPLAYED ON VEHICLES USED FOR PRIVATE PURPOSES, and that they are to be returned to the A.A. & M.U. on my ceasing to be a Member.

Please state whether WHITE METAL or BRASS Badges are required.
If a clip for attachment of the Badge to the Radiator Neck is required, kindly give measurements.



Name
Permanent Address
Reg. No. of Car
* Please strike out unnecessary words.





Organisation

Founded fifteen years ago by the present Managing Director, we are the oldest and leading Car Insurance Brokers, controlling a large volume of business, and consequently in the unique position of securing for our clientèle the best policies at the right price.

Claim Service

The first consideration of the Motorist when an accident happens is where his car can be repaired, how the work will be executed and when it will be on the road again. THE "TOWNEND SERVICE" has always been recognised as the best, and continues to increase its popularity every Season. Favour us with your Insurance and become one of our patrons.

Security

All policies are underwritten at Lloyds and with the leading Insurance Companies.

HAROLD TOWNEND Ltd

Managing Director

HAROLD TOWNEND

13-14 ABCHURCH LANE
KING WILLIAM STREET
LONDON, E.C.

Phone:
Central 156
12 Lines

Wires:
"Carinsui"
London



MAXIMS FOR MOTORISTS.

(With apologies to "ARTEMAS.")

Brilliancy and wisdom come *only* from sages, so take heed unto my words, O! ye motor understanding.

When a young man buyeth *for himself* automobile he should take out a licence, otherwise, verily, will ill befall him *at the hands* the police.

And when a young man taketh unto him an automobile, assuredly he must *at the same time* possess himself of a map of the country *over which* he will travel, and if he is wise will acquire *also* a compass. A map is wisdom unto the wise and a pitfall unto the foolish, while a compass is *only for him of* understanding. Wherefore, study the map and the compass.

Beware, O! my friends, of the pedestrian big-boots, for though *he would* seem clumsy gait, yet verily *is he* a policeman in disguise for he holdeth a stop-watch in *one of* pockets, which he will click at the right moment. Peradventure *it will be* at the *wrong* moment but it mattereth not in a Court of Law, for Justices, *who are so yclept*, are against motorists. For the why none know, except that they imagine in their childish way *that he who drives* a motor-car is made of money.

And beware, O! my sons of motordom, thou art trapped by the wily garage proprietor who scattereth nails, glass, *and so forth* on the road before and aft his house of business, there shall the unwary be trapped for the good of the garage, and *for thine own* undoing.

Wherefore shalt thou *also be on thy guard* against the fair Hebe of the Saloon Bar, who will verily ensnare thee into imbibing Whiskey. Then *assuredly* wilt thou, thy wife and family be unable to proceed on thy journey and he *that is yclept* Boniface will reap much profit, forasmuch as ye will stay the night at the hostel, even thou and thy wife and thy progeny.

Trust not, O! my brother of the road, the man who saith: "Yea, verily, there is a hostel passing fine, five hundred cubits along the road," for peradventure *it will be* a vile house, where Government ale, yclept "swipe" and nought else can be procured; yea, not even bread and cheese. *It will be* a vile spot.

When a man enquireth *of thee*: "Hast thou petrol?" beware, for probably he hath a petrol-lighter, made of regimental buttons, for petrol-lighters *are* thirsty things.

Now listen unto the words of the Pundit, from him alone cometh wisdom.

"PUNDIT-WALLA"

The war test of the **SUNBEAM**

CARS and SUNBEAM - COATALEN AIRCRAFT ENGINES

has completely justified the confidence
reposed in them by accredited experts.

A special distinguishing feature of the
Sunbeam models is that their grace of
outline is consistent with the sound
constructional excellence embodied in
engine, chassis and coachwork.

**THE SUNBEAM MOTOR CAR
CO., Ltd., WOLVERHAMPTON.**

Manchester Showrooms - - 106 Deansgate

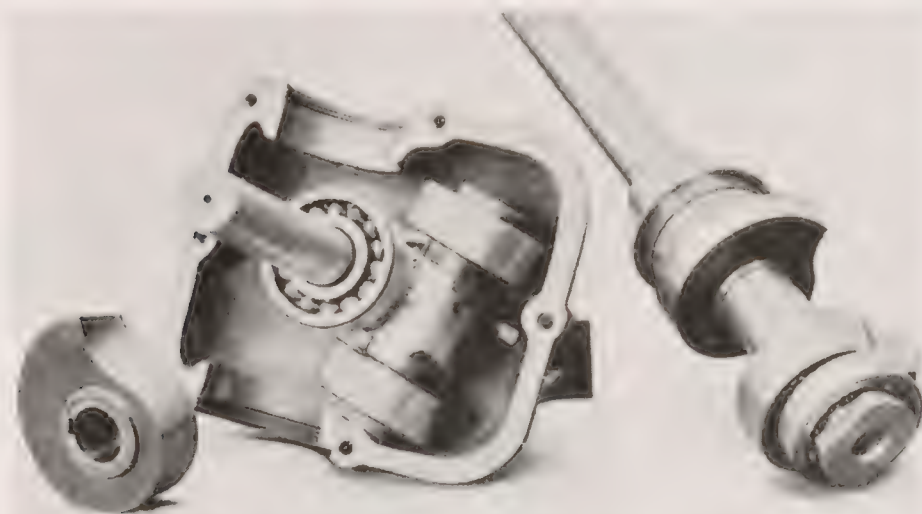
London and District Agents for Cars:

J. KEELE, Ltd., 72, New Bond Street, W.1.



A REVOLUTION IN STEERING.

WHILE perfectly aware that the term "revolutionary" has been applied on innumerable occasions to inventions which have ultimately failed to fulfil their initial promise, we are none the less greatly impressed by the device which is described herewith, and see no *prima facie*



DISMANTLED PARTS OF THE MARLES STEERING GEAR.

reason why it should not eventually be employed on every high-class car worthy of the name. The evolution of the perfect motor-car has been a lengthy process, involving experimentation with, and the revision of, nearly every detail from end to end of the chassis; yet there is one item which has undergone no change to speak of for twenty years, and is still inherently unsatisfactory.

This, of course, is the steering gear, which every driver finds in actual practice to be little short of a nuisance. It only varies on different cars according to the pitch of the worm and pinion; but in every case alike the effects of wear disclose themselves ere long, with resultant backlash, and a system of adjustment that is of doubtful efficacy.

So long, in fact, has the worm and sector system been in vogue that it is obviously incapable of improvement, and if relief is to be found it must necessarily proceed from some entirely different method. Such a one is the Marles steering gear, which has no kinship whatever with the worm and sector system, but is an ingenious arrangement of cams and rollers. Now, it is an essential principle of a rolling surface that it is virtually free from either wear or friction, and this feature of itself presents an overwhelming advantage where steering gears are concerned, and at one stroke puts the worm and sector method out of court.

In the Marles system the two cams are mounted on the steering column, in lieu of the worm wheel, and impinge on two ball-bearing rollers fixed on each side of the steering arm. The steering column itself, it may be mentioned, is also mounted on ball bearings. Throughout the whole system, therefore, the element of friction is eliminated, and the gear is just as good after years of use as at the outset.

No lubrication, therefore, is required other than as a protection against rust. As the gear requires no attention, moreover, the designer need not consider accessibility when determining its position on the chassis. Another point to emphasise is that, as the profile of the cams has a varying pitch, a low gear effect is provided when the greatest control is most needed—*i.e.*, when the front wheels are in or near the straight ahead position and the car is travelling at high speed. The Marles gear being free from friction, moreover, the car follows its natural inclination to straighten up if allowed to do so.

USEFUL AID.

The Automobile Association performed a very useful office when it set up its telephone sentry boxes at various points. It has now gone one better, however, by providing a number of motor-cycles, each of which is fitted with a side-car outfit equipped with spare tyres and tubes, tools necessary for light



AN A.A. FIRST-AID MOTOR-CYCLE.

repairs, spare ignition plugs, etc., and also a stretcher in readiness for personal injuries.

These first-aid motor-cycles work in conjunction with the A.A. roadside telephones, and will respond to calls from stranded motorists anywhere within a radius of thirty miles.



*The New
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OF THE

BRITISH MOTOR
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LIMITED

IN

KING STREET
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Electric Light & Self-starter **£850**

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The New Service Organization for Motorists

HEAD OFFICE: 22, KING STREET, ST. JAMES', S.W.



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years ahead of all others. The
product of the Firm which gave
Motorists the ALL-PURPOSE carriage.
Opened or closed instantly by simple spring
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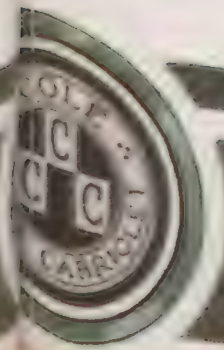
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MAXIMUM PLEASURE WITH MINIMUM RISK

No invention or device ever introduced to motorists has added so greatly to the pleasure of the road and taken away so much of its danger as Triplex Safety Glass. Many a run giving promise of keen enjoyment and exhilaration has been spoiled by some trivial shock or collision that has caused windows or windshield to fly in a thousand wounding splinters, but with "**TRIPLEX**"—an absolutely unsplinterable glass—clear as crystal and strong as steel—such dangers are totally eliminated. Experience proves its value for goggles, windcreens and panels, and lower road Risk Insurance Premiums testify to its economy.

THE

'TRIPLEX' SAFETY GLASS

CO. LTD.

(Reginald Delpech, Managing Director)

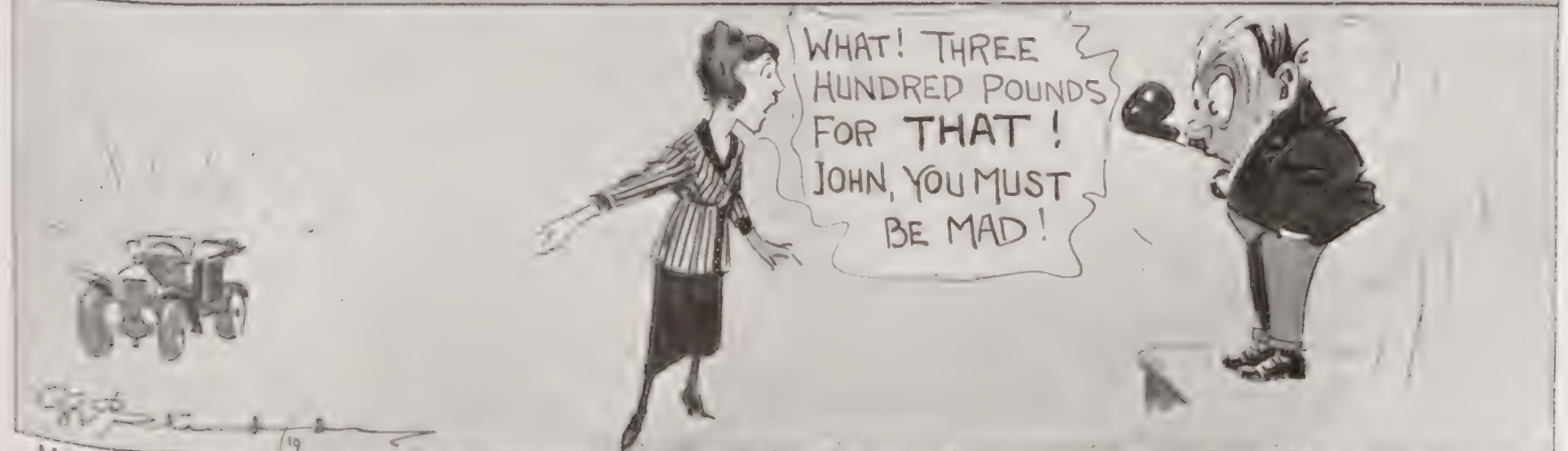
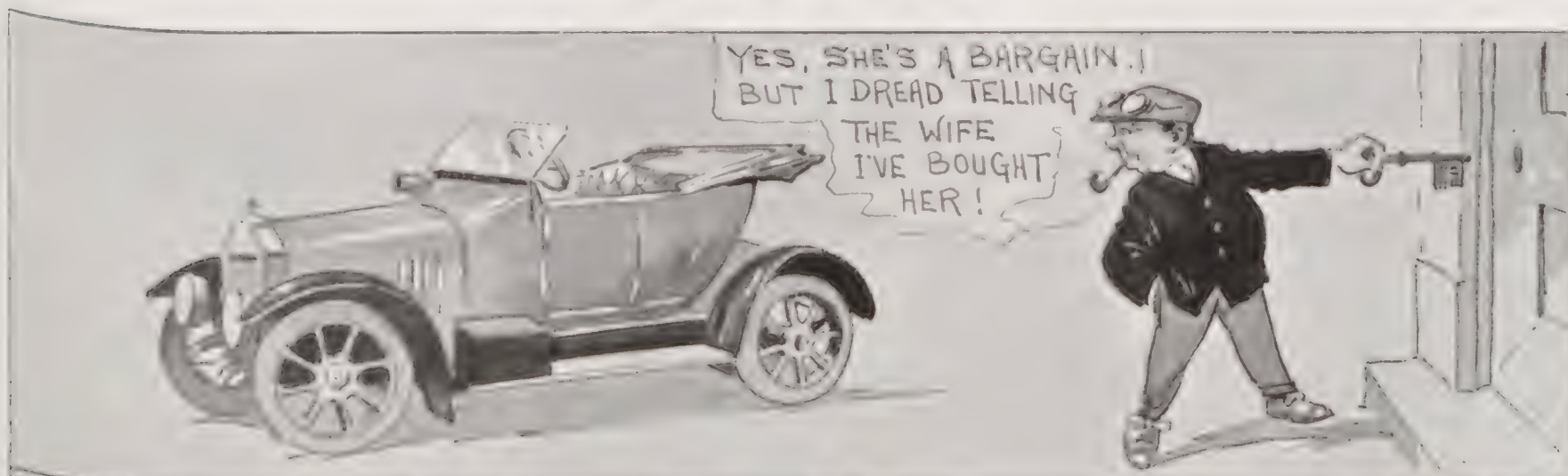
1, Albemarle St., London, W.1

Telephone:
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Telegrams:
"Shatterlys, Piccy, London"



A Terrible Ordeal



MR. G. E. STUDDY'S IDEA OF WHAT WE HAVE TO GO THROUGH WHEN WE BUY A CAR AND TAKE IT HOME.

BUYING A CAR.

By DOUGLAS W. THORBURN.

AT the present time the industry showing the greatest activity appears beyond doubt to be the motor industry. I would not go so far as to say it is the industry doing the most business, but it certainly seems to be the one showing the most activity. Everyone talks motors, the Press is full of alluring offers of wonderful cars, or pathetic appeals for any old sort of car at any old price, and now even a new magazine is placed before the motor-owning public. Obviously one must have a car. I have been thinking about it myself recently.

It was not so simple as I had at first imagined, even with the enthusiastic assistance of my wife, who takes a keen personal interest in the subject. As far as she is concerned it must be an "all-weather" type of body—for she has little respect for the British climate—and she has also decided upon the colour of the upholstery. I forget how she describes it. The make, horsepower, price and details of that sort she is willing to leave entirely to me. Likewise how the money is to be found.

I started to study carefully the motor advertisements on a large scale, and the result was complete chaos. Every car appeared to have countless advantages over every other car. Obviously it was not possible to select one by the pictures, so I mentioned the matter to one or two of my friends who are supposed to know something about cars.

Remarkable to relate, each one happened to have heard of the very car for me only the previous day—an absolute bargain, a "dead snip," or something to that effect. None of them had done more than 500 miles, they all averaged at least 30 miles to the gallon, and one had an altimeter to show if you were going uphill or down. Unfortunately, in each case I should have to go to Aberdeen or some equally provincial place to inspect, and it was quite possible the car would have been sold that morning.

One good friend at the club showed me a large advertisement announcing that a sportsman had decided to give up his recreation of road-hogging and start bee-keeping, and he was therefore offering his stable of one two-seater Ford (1905), one motor-cycle (hind wheel miss-

ing), one motor-scooter (only run 50 yards), and a push-bike. Price for the lot, £500, postage extra. No dealers, no offers, no trial runs to Brighton. I might have considered this, but was advised that 1905 was not a good vintage.

All that was left was to make a tour of some of the show-rooms. I always had rather a dread of the modern car salesman. However, it had to be done, so I had last year's spring overcoat pressed, and invested in a pair of dazzle socks in order to be able to mix on more equal terms with the salesmen, and we started.

We went the whole length of Great Portland Street, among the shell-holes, mine-craters, and other pitfalls of Euston Road—at present the worst bit of road in London—through the hampers of the fruit merchants into Long Acre, and finished up in the luxurious salons of Mayfair. Some of the salesmen were very polite, and some were very talkative. Some showed us specimens of their pre-war type and explained how much better the post-war car was going to be. There were places where a commissionaire simply handed us a catalogue and said, "Good morning—mind the step."

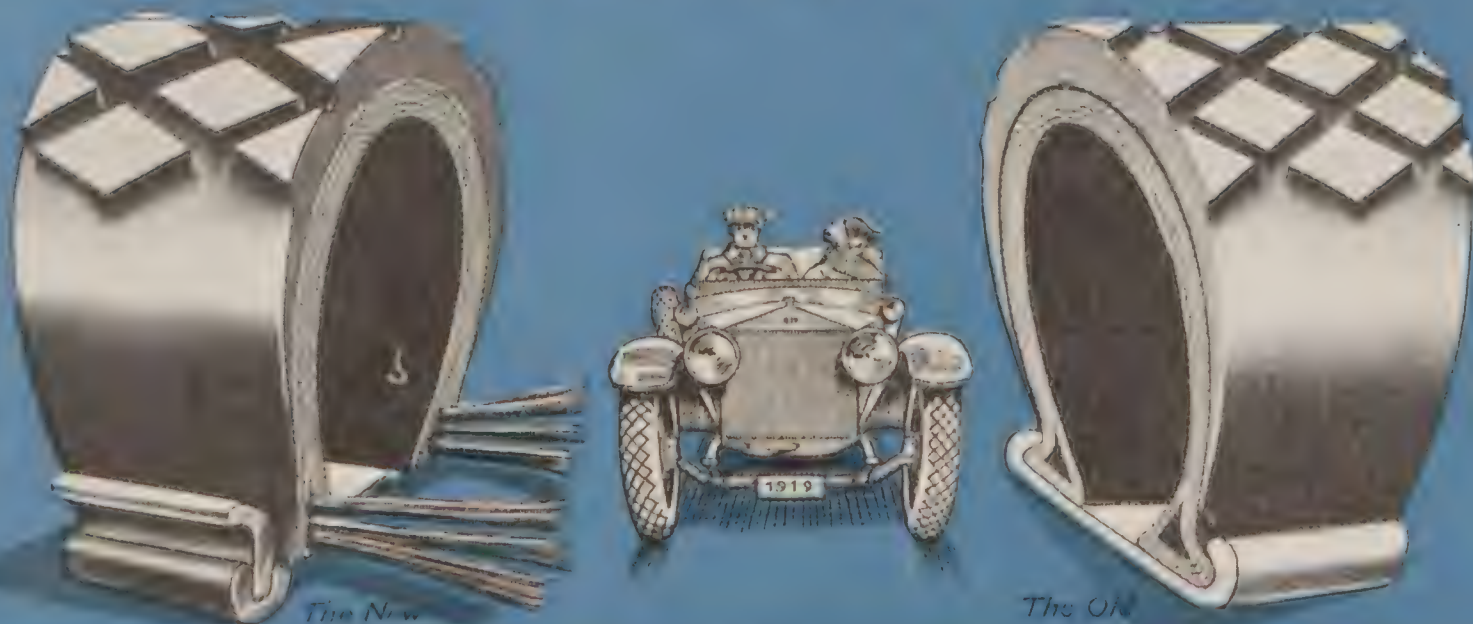
At last we found The Very Car. It was just the size and just the price. That is to say, it was £100 more than we thought we should have to pay, which was what we expected. My wife was delighted with the colour of the cushions, and favourably impressed by the fact that it had a silver hand-mirror and a clock which was showing the correct time.

We had a trial run around the Park. It ran perfectly, the engine purring smoothly like a cat before a fire. People turned and looked admiringly at us as we passed, and if we could have purred also we would have done so. This was what we had been searching for. This was *IT*.

On our return the salesman booked our order politely. "When can you deliver?" I asked. "Let me see," said he; "we hope to start work on the new models next September. Your order is number 1896. You ought to get it in 1925, about the end of October or the beginning of November—that is, of course, if we have no strikes." . . .

And now we shall have to start all over again.

The STRAIGHT SIDE No-Hook TYRE



THE Goodyear Straight Side No-Hook Tyre, already in full use in Canada, Australia, and the entire American continent, is on its way to the English market. Learn its five chief points *now*—be ready to welcome its appearance for the great advantages it offers.

On account of the rigid bead of the tyre—composed of 126 closely braided piano-wires—it is *impossible for the tyre to blow off the rim* when under-inflated or punctured.

The wide base of the rim increases the air-space. The Goodyear Straight Side No-Hook Tyre therefore serves the purpose of an *Oversize Tyre*.

The flanges of the rim curve outwards, and thus *rim-cutting is impossible*.

The two-part rim simplifies the removal of the tyre. Only a screw-driver is required—no more tyre levers. An amateur can change the tyre in less than five minutes—a chauffeur in less than two.

The rim on which this quick detachable Tyre is used can be fitted to either wood or wire wheels.

Less trouble and expense; less wear and longer life—that sums up the GOODYEAR STRAIGHT SIDE NO-HOOK TYRE. Shortly to be seen at your Garage alongside the present popular Goodyear Beaded Edge Tyres.

GOODYEAR

THE STRAIGHT SIDE NO-HOOK TYRE

THE GOODYEAR TYRE & RUBBER COMPANY (GT. BRITAIN) LTD.
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IN this great contest of durability it is quality that counts. Quality in the man, the mechanism and the materials used in the flight. That the engines of every British machine entered to date will be lubricated with

WAKEFIELD
'CASTROL' "R" REGD.

bears its own significance.

C. C. WAKEFIELD & CO., Ltd.,
Wakefield House, Cheapside, London, E.C.2.



What the Motor and Allied Industries owe to ADVERTISING

SCARCELY a score of years back "Sceptic," standing in his front garden, looked aghast when a noisy early-type motor-car rattled heavily past, leaving a cloud of dust, mingled with a blue vapour of unmistakably "motorish" odour. "Road hogs! Glad when they're done away with!" was "Sceptic's" unspoken thought as he turned to see if the rose tree he had been pruning had survived the attack.

It had. So also has "Sceptic," for to-day the same man daily jumps a bus or hails a taxi as a matter of course. In less than a score of years the motor-driven vehicle has been brought to a high state of efficiency, dependability and convenience. It is the recognised means of rapid road transit and transport, as well as the most popular and fashionable of open-air pastimes.

Less than a score of years has seen the motor-car out of its experimental stages and has established it as an indispensable national commercial resource. Engineering science has perfected the motor-car. The advertising science has popularised it.

Just how closely the house of A. J. Wilson & Co., Ltd., Advertising Contractors of London, has been concerned with the development of the motor and allied industries was aptly described in the "Advertiser's Weekly" of Jan. 17, 1919, in its reference to the firm as

"Unquestionably the most important Agency in the country in Motor Advertising; an Agency, too, that has perhaps contributed more directly to the prosperity of the cycle and motor industries than any other factor."

If yours is a motor proposition or in any way connected with the motor industry, you can only benefit by discussing its advertising with us. We place ourselves, together with our well-equipped organisation and our unique experience, at your disposal.

Make an appointment.

A. J. WILSON & Co., Ltd.

*Motor Advertising Contractors, Designers,
Engravers, Printers, all under one roof at*
154 CLERKENWELL ROAD, E.C.1

PETROL v. BENZOLE.

Points in Favour of the Home-Produced Fuel.

By CAPT. E. DE NORMANVILLE, R.E.

FOR some years past the problem of the home-produced motor fuel has exercised the minds of a little band of enthusiasts. It has now assumed a position of national importance and become a subject of all-round interest. One does not wish to be unduly optimistic, but it may safely be said that the prospects of this country, in regard to this all-important question, are far more promising now than they have ever been before. According to the old adage, it is an ill wind that blows nobody any good, and in point of fact the present prospects of the home-produced fuel movement are largely attributable to the war. Thus a measure of good is evolved from a mass of evil.

WHY PRODUCTION HAS INCREASED.

It is interesting to review briefly the causes and extent of the growth of benzole production during the past few years. It will be recalled that, in the early days of the war, there was a great outcry in regard to the shortage of shells. That shortage was due not so much to an insufficient supply of the "shells" of shells as to the want of explosive material wherewith to fill them. That is where the benzole situation had such an important bearing on our war efficiency. Benzole is needed in the production of lyddite and trinitrotoluene, the latter being commonly referred to as T.N.T. Thus it came about that there were urgent demands from the Government for increased supplies of benzole, and the industry responded nobly to the call.

Before the war the output of benzole had increased from a nominal one to some 14,000,000 gallons per annum. It has now assumed an output exceeding 40,000,000 gallons a year, and will soon make considerably further progress—subject to suitable conditions obtaining. It is in this respect that a definite obligation rests upon the shoulders of the motor-owner.

THE MOTOR-OWNER'S DUTY.

The war has taught us all a lesson of duty and self-sacrifice. Granted suitable conditions, the present output of benzole can be increased to 100,000,000 gallons per annum in the course of the next ten years or so. One of the essential

factors to the materialisation of that desideratum is the continued existence of a ready market, at a reasonable price, for motor benzole. Consequently a duty devolves on every motorist to assist in ensuring this state of affairs. It may be that in the early days such assistance to the movement will involve a small measure of sacrifice, but it is to be hoped that this will be neither considerable in magnitude nor excessive in duration. In any circumstances, we must all do our share to assist the growth of the movement, remembering that it is to our own interests so to do, and also to the interests of the nation.

USE BENZOLE.

Every motor owner, therefore, must use benzole wherever and whenever it is practicable to do so. In some cases it may entail a little sacrifice in regard to the question of the ease with which it may be obtained. It is obvious that the National Benzole Association will not be able to accomplish in a few months what the great petrol companies have taken many years to achieve—a perfect system of distribution. Those of us who "motored" in the pioneer days will remember how it was necessary to look up in "the book of words" the next town where it would be possible to buy petrol. We used to arrange our touring according to the localities where petrol could be bought, and not infrequently had to make special provision for supplies when taking a long journey. Benzole may not be obtainable at every garage just yet, but the situation is improving in this respect, and will continue to do so. We must all, therefore, make up our minds to foster the growth of benzole production by using it regularly, and thus encouraging increased production.

UNWARRANTED PREJUDICE.

Some motorists are prejudiced against the use of benzole in their cars. It is necessary to make the situation in regard to this matter quite clear; it is equally necessary to be unbiassed and perfectly frank on the subject. Granted good quality benzole, there is absolutely no reason for prejudice against its use. Let there be no misunderstanding whatever on that point. The statement is very definite, but

June, 1919

it is based on many years' practical road experience, the results of actual comparative trials on engines in test shops, and the chemical examination of many hundreds of samples of benzole. So far, so good.

On the other hand, it would be useless to deny that the employment of inferior quality benzole will lead to trouble. Herein lies the cause of prejudice. Where the use of this home-produced fuel has not been found satisfactory, it is due not to the employment of benzole as benzole, but solely to the fact that an inferior quality has been used.

REMEDYING THE DANGER.

In the past, unscrupulous or ignorant purveyors of benzole have been guilty of selling spirit quite unsuitable for internal combustion engine use. It is the old story of the gentle profiteer. Properly to rectify and wash the spirit costs money. No one but an expert or a chemist can differentiate between a good benzole and an inferior one; the temptation to sell an inferior quality spirit is therefore obvious. It is gratifying to know that the National Benzole Association is taking a firm stand on the point. It has issued a standardised specification for benzole for motor use, and a spirit conforming to this specification is suitable for motor engines. It will shortly be possible for the National Benzole Association, with the co-operation of the motoring community, to ensure that unsuitable spirit no longer finds a sale to the unsuspecting motorist. Until that time arrives it is by no means unwise to exercise ordinary precautions in making purchases. For instance, the origin of the supply may be queried. Has it come from a member of the National Benzole Association? If there appears to be any doubt, play for safety by using the benzole mixed with petrol. Any proportion in the neighbourhood of a 50 per cent. mixture will be found quite satisfactory.

BETTER THAN PETROL.

A good quality benzole is a better motor spirit than petrol; the word "petrol" is used in its generally accepted meaning, and conveys no intended comparison with any specific brand. Benzole is just as clean a spirit, gives from 12 per cent. to 15 per cent. more power, increases the mileage per gallon by about 20 per cent., obviates any tendency to the knocking of an engine, and "starts up" as easily as petrol. It may be used without any alteration to the carburetter, and should give quite good results under ordinary conditions. If one be anxious to obtain the best results from its use, a few minor

alterations may be made. The addition of a heating muff is very beneficial (this is equally applicable to present-day petrol), and serviceable fitments may be obtained at a reasonable cost. If the carburetter be accurately adjusted for petrol, the rate of flow through the jet should be reduced from about 10 to 12 per cent. for benzole. Note in this respect the words "rate of flow," as a reduction in the area of the jet orifice of such a percentage may give quite a different reduction in the rate of flow: this latter is the point which counts. Then, again, benzole is a heavier spirit than petrol, the difference being roughly 20 per cent., so that better results can be obtained if the weight of the float is increased to this extent.

A SIMPLE TEST.

If such adjustments are made, or even if they are not, for that matter, see that the engine is clean. For example, the valve caps can be cleaned for the purpose of the test. After a run of fifty miles on benzole, have a look at the valve caps again. If there is any sign of sooting up, it will mean that the jet orifice needs slightly reducing. Some motorists attempt carburetter adjustment for benzole by the process of leaving the jet alone, and increasing the air supply. It is preferable to work on the lines laid down above. In the first place, however, it is as well to see what happens without making any adjustments, as few carburetters are quite correct in their setting for petrol when the car has been used for any length of time. The adjustments referred to are based on the assumption that the carburetter is accurately set for working on petrol.

When using benzole, remember that it is a stronger solvent than petrol. Rubber joints in the pipe line must therefore be eschewed, and care taken not to spill the spirit on any paint-work.

ALCOHOL POSSIBILITIES.

The action of the Government in permitting experiments with denaturised, home-produced, duty-free industrial alcohol (the adjectival excess is regrettable, but necessary!) is as welcome as it is belated. Here also are great possibilities for the future of the home-produced fuel problem. Alcohol can be freely produced in this country and Ireland. Used alone it is not suitable for a motor engine as at present designed, but, mixed with benzole, an excellent spirit is produced. Every motorist, therefore, should make up his or her mind assiduously to foster the growth of these two industries.

PELMANISM AND ENERGY.

"It Brings Your Mind into Action at Once," says a Pelman Student.

IN Business and Commercial life—as, in fact, in every other sphere of human activity—permanent success can only be won by those who possess energy, and energy rightly directed.

Perhaps more men and women have failed in life through lack of energy and application than from any other causes, and very frequently these failures have been the most disappointing and saddening of all failures, the failures of men and women of brilliant mental ability.

Lack of energy is one of the weaknesses which often seem to dog the footsteps of clever people. All through their lives their talents have proved their undoing. So quick are they at "picking up" things that they are apt to be tempted to neglect that steady application and mental discipline which is so necessary to those who wish to succeed in any undertaking. The fable of the hare and the tortoise has many a counterpart in contemporary life. People are attracted by the intellectual brilliance of an individual, they trust him, they give him opportunities—and then they are disappointed. He never quite "gets there." He is bored by routine. He lets opportunity after opportunity slip by. He gets the reputation of being "unreliable." And finally he is passed in the race of progress by those who may not possess his talents, but who have acquired that habit of persistent energy which he lacks.

THE POWER-HOUSE OF ENERGY.

One of the most valuable features of Pelmanism to the men and women of the day is that, in addition to providing a complete course of mental discipline and training, and besides "bringing out" just those qualities which are of the greatest use in every Profession, Business, and Occupation, it actually develops, and, in fact, generates that energy which enables those who possess it to put their other faculties to the very best possible use. To those who apply themselves conscientiously to the lessons of the Pelman Course, Pelmanism is a veritable Power House of Energy. As a Pelman student writes in a letter quoted below, "it brings your mind into action at once," so that you never, through lack of energy and alertness, let an opportunity slip by. It makes you, in fact, "a live wire": one of those men and women who are invaluable to any business and in every position; one of those who, practically speaking, are almost bound to succeed.

"The 'little grey book,' which impresses me very much," writes the student referred to, "was the one which dealt with Human Energy. It brings your mind into action at once. . . . It makes you feel you are of some use to everyone. It makes you think for yourself. You cannot help being energetic. It makes your work come quite easy, and you take a great interest in your achievements. You feel that you must keep on working hard, for only by hard work and human energy can success come your way. I am sure that, with energy, your character changes, and your mental faculties improve. You begin to feel happier, you like your work. . . . and you jump at the chance of a more responsible job coming your way. I am sure we all have our definite aims, and only Human Energy will help us to carry them to the end."

"AN ALL-ROUND MENTAL RENAISSANCE."

As the above letter implies, Pelmanism not only re-energises the mind, but it develops other valuable qualities as well, all of which make for efficiency in man or woman. This is stated more definitely in a letter recently received from a Sergeant in the Army, from which we quote the following paragraph:

"I have experienced," he says, "an all-round mental renaissance. I have learned the meaning of mental efficiency; I have come to appreciate its value. I have been brought to realise the importance of a good memory; I have been taught how to generate energy; the efficiency of my senses has been wonderfully improved—I 'observe' now where I merely 'saw' before; my Will-Power has been greatly strengthened;

I have learned to think connectedly and to work methodically; I have been shown how to concentrate; self-confidence and initiative have been developed; and my imagination has been stimulated. Other benefits I have derived, but it is unnecessary to proceed further—they are too numerous to enumerate here. Still, I have to admit that they are all attributable to 'Pelmanism.' Mark you, I do not speak at random, my eulogy is bestowed advisedly, for my improvement is self-evident and unmistakable."

He concludes with a reference to the "pleasure" he has experienced in going through the course and working out the papers, which, he says—as many thousands have also said—"are extraordinarily interesting."

RAPID PROGRESS SECURED.

The result of Pelmanising is quickly seen in the rapid progress the Pelmanist makes in business and commercial life. His or her increased efficiency attracts the notice of the management, and promotion, with increased remuneration follows:

"Prior to being a Pelman student," writes a correspondent, "I watched with envy others succeed where I failed, and I wished I had been born with the qualities to succeed as they had been."

"Then I applied Pelman methods, and in three months am well on the way to succeed as they did."

It is a common fallacy to suppose, as this student supposed, until Pelmanism disproved the idea, that the qualities which make for success in life are "born" in the minds of a few exceptionally-favoured individuals, and that others do not possess them at all. Most people possess these qualities in some form, but in 99 cases out of 100 they are not developed, and are therefore made of little use. Pelmanism develops these qualities to the highest possible point of efficiency, and brings out the best that is in everyone. And such is the value of Pelmanism in business that many important firms have actually enrolled the entire staffs for a course of Pelman training, knowing that the cost of the fees—and these fees are very moderate and well within the reach of everyone—would be repaid over and over again in the increased efficiency of their employees. And employers find Pelmanism equally as valuable to themselves as to those they employ. Thousands of workers and hundreds of leading business and professional men are now practising Pelmanism themselves, and gaining great advantages from the course.

DOUBLING YOUR EARNING POWER.

A greatly appreciated feature is the personal interest the Pelman Institute takes in the welfare of its students. As the result of the advice given by the Pelman instructors, "I have," writes one, "obtained a position in a firm where I always desired to go, and my salary has been increased nearly 50 per cent." And many Pelmanists report income increases of 100 per cent., 200 per cent., and even 600 per cent., as the result of the increased efficiency gained from Pelman training. "It is the best investment I have ever made," is a phrase repeatedly occurring in the letters received from delighted Pelmanists. And by this increased efficiency not only is earning power doubled and trebled, but work is made easier, so that better work can be done in less time and with less fatigue. "I have been able to add two hours daily to my business working capacity," writes a Pelman student, and many report an even greater gain than this.

Yet the Pelman Course itself is perfectly easy to understand and to follow. It involves very little expenditure either of time or money, and it is as interesting to study as it is remunerative to practise. Full particulars are given in "Mind and Memory," which will be sent free on application to readers of THE MOTOR OWNER, together with a reprint of "Truth's" latest Report on the work of the Pelman Institute, and particulars showing how to secure the Course complete at a reduced fee. Apply by letter or postcard to The Pelman Institute, 512, Pelman House, Bloomsbury Street, London, W.C.1.



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WHY CARS ARE LATE.

An Explanation of what "Changing-over" Implies.

INSOMUCH as the armistice was signed at the very period that coincides in peace time with the holding of the Olympia Show, it was imagined by many would-be purchasers of a new car that they would be able to get delivery in the early spring. The manufacturers, they assumed, would surely be prepared for the contingency of peace, and be not only ready with their new designs, but also to start off straightway with their production.

Preparedness, so far as concerns foresight, is an issue by itself, and different makers have evidently had different ideas as to when the war would end, and whether it was worth their while, in the midst of the insistent claims from the powers that be for munitions of war, to give

ally implies, and the statements which we publish below will be found informative by those who have had no opportunity of studying the subject from the productive point of view.



THE SAME SHOP CONVERTED FOR THE MANUFACTURE OF 12-INCH SHELLS.

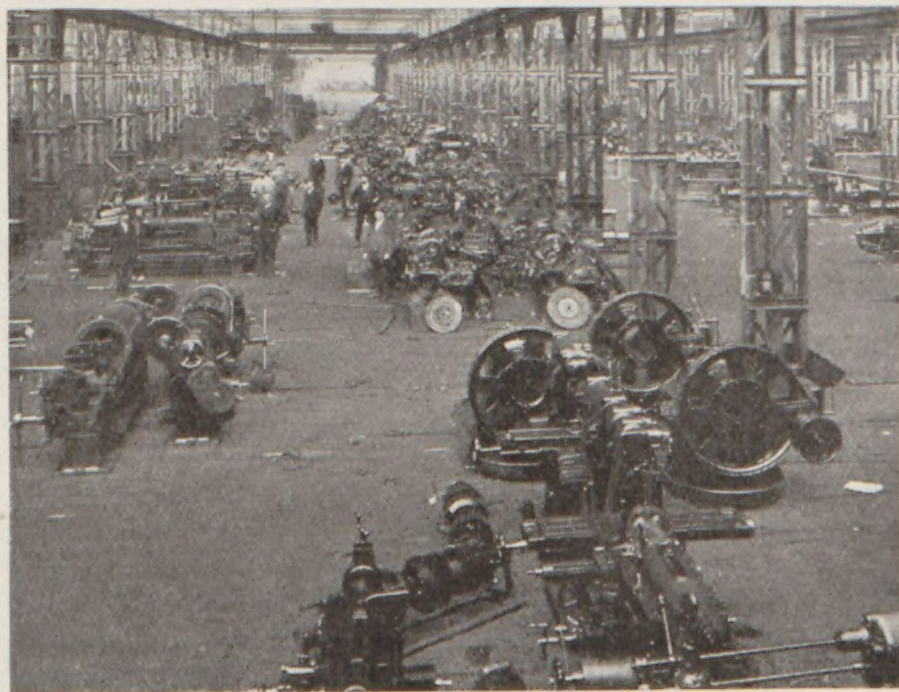
"Everybody knows," one firm remarks, "that for some time before the armistice practically all pleasure motor-car production had stopped. Manufacturers taking up the production of motor-cars can be broadly divided into two classes:—(1) Those who intended to sell substantially



AN ERECTING SHOP IN PRE-WAR DAYS.

any interim consideration to the designing of new models in readiness for a reversion to the normal business of their works. But the point which the public generally, owing to its unfamiliarity with factory routine, had not appreciated in due measure was the length of time essential to the process of "changing over" from one class of work to another, even if new designs had been prepared in advance and automobile manufacturers had been anxious to embark on car production as soon as they were free of Government demands.

With a view, therefore, to elucidate this aspect of the problem we have asked two representative firms to furnish us with detailed explanations of what the "change over" actu-



THE SHOP IN PROCESS OF RE-ORGANISATION.

the same designs and types as they were making before the war; (2) Those who are entering the trade or propose to re-design their models.

"The time before which cars can be ready for delivery will be far greater in the second than in the first, due to the period required for the production of drawings, patterns,

dies, jigs, tools, etc., and for experimental and development work. In the case of the former class, in the ordinary course of manufacture in pre-war days, the period which elapsed between the actual placing of orders for material by the manufacturer and the delivery from the works of the car made from that material was not less, on an average, than four to five months. In the present abnormal conditions, this period of four to five months might well be increased by 50 to 100 per cent., so that it is probable that deliveries can not be made in less than about seven or eight months from the date of the armistice.

"Why this greater time elapses from the date of ordering the material to the delivery of the car is not difficult to understand, and the reason may be briefly related. One may point out that most manufacturers have been producing aircraft or some class of munitions work quite different from that upon which they were previously engaged. This work, in most cases, required an entirely different grouping of machinery, as well as new tool equipment.

"The shops had therefore to be remodelled and tool equipment produced before motor production could start. Further, as the armistice came sooner than was generally expected, manufacturers had not only to place their orders for new material, but had in most cases to arrange for sources of supply. These sources, such as foundries, forges, rolling mills, and press shops were also all engaged on war work, and had to re-organise themselves for peace-time production."

ANOTHER VIEW.

"When the armistice was signed," the second firm writes, "it was realised that it would be necessary to prepare as quickly as possible for the peace programme. The state of affairs which then existed was that a tremendous organisation had been set up for the manufacture of aero-engines in ever-increasing quantities, and all energies had been concentrated on this war product, and the organisation extended to a very large number of sub-contractors. The plant had been augmented, and was re-arranged so as to get the very best possible output of the aero-engines, and all thoughts of manufacturing cars had been put entirely in the background. To stop this production of war material and immediately to restart making cars would have meant disaster.

"It takes a minimum of from four to six months to stop the tremendous flywheel of production and to start the production of another commodity. In normal times a reasonable period from the commencement of ordering materials to the turning out of the first of a series of high-class motor chassis would be six months.

"This estimate is based on the assumption that all drawings and specifications are completed and in the hands of the department which purchases the raw material, and that the plant is ready to pick up, immediately, materials as they arrive. From these facts it can readily be appreciated what an enormous task the manufacturer is faced with, in order to get his chassis placed on the market in a reasonable time to meet the requirements of the numerous impatient motorists who await its appearance.

"In stating that six months are required before the first of a series can be turned out, it is assumed that it takes two months to order up and obtain materials, three months for the materials to pass through the manufacturing processes, and one month for erecting, testing and despatching.

"At present, however, there are many difficulties in the way of following a normal time-table. There are new

designs and improvements to incorporate in the new chassis; new drawings and specifications will need to be issued after the experiments have been carried out; new jigs and tools to be designed (as the plant has probably been greatly increased during the war, and more up-to-date manufacturing methods are required); new patterns are needed for the foundry, and new dies for the drop forge. After all the designs and specifications have been settled upon the special materials have to be ordered up, and the material suppliers, like all other people who have been engaged on war work, are probably not in a position to give the deliveries required.

"It must also be borne in mind that the rate of output is always controlled by a 'bottle neck,' viz.:—The speed at which the part can be made which takes longest to produce. Then, too, the date on which the first chassis can be produced is dependent on the fact that car parts can only be made on the machines when these machines have been liberated from aero-engine work.

"Surrounding all these difficulties are the problems of labour. Dilution must be dispensed with and skilled men taken back from the Forces, but the skilled men are not forthcoming in the quantities required to fill the gaps. Machines are consequently left standing, and the general difficulties are such that the management must at all times endeavour to keep a cool head during the anxious time of transition from war work to peace work, in order to maintain the equilibrium."

By way of postscript one may point out that the two firms whose views we have quoted are concerned with the production of the largest and highest class of cars, and that the figures relating to peace-time output might be abbreviated in respect of smaller and less costly chassis. The war-time difficulties as to changing over, none the less, are applicable to all factories of appreciable size.

NOTICE TO CONTRIBUTORS.

The Editor will be pleased to consider contributions of special interest to the car-owner, provided they are of high quality and in every way suitable to the magazine. Short illustrated articles are preferred, dealing with any aspect of private motoring, either as regards touring or the home management of the car. First-class snapshots of roadside scenes or incidents are particularly desired. All photographs and sketches should be fully titled on the backs and bear the name and address of the sender.

Contributions should be addressed to the Editor of "The Motor-Owner," 33, King Street, Covent Garden, London, W.C.2., and should be accompanied by a stamped, addressed envelope. While every effort will be made to return them if unsuitable, the Editor cannot hold himself responsible in case of loss or damage.

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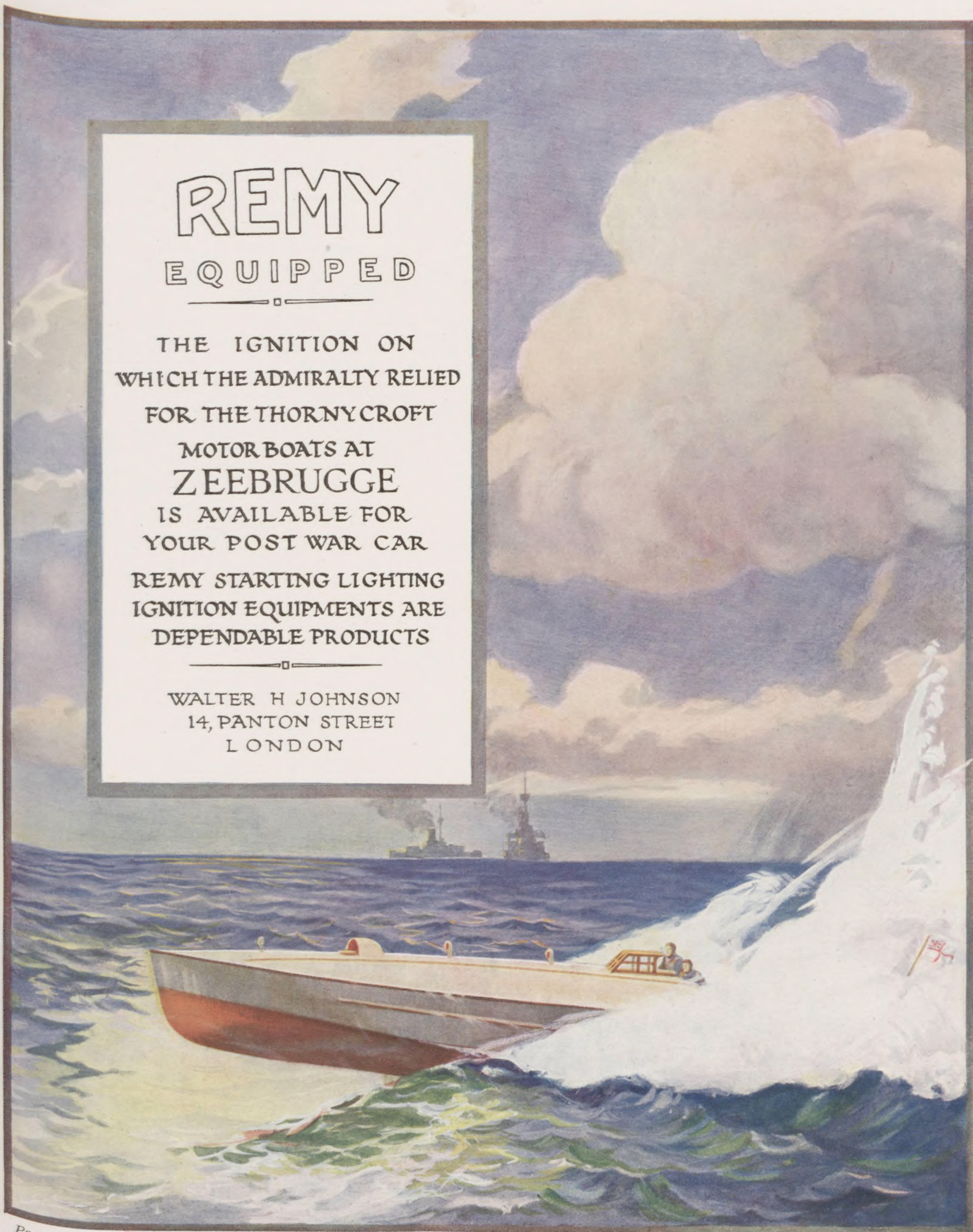


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